Service Manual

Facsimile

UF-590 / 790

Panasonic®

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1 Specifications Table

1.1. Fax Function

Items	Description UF-590 UF-790	Description UF-595 (Reference)	Remarks
Main Specifications			
1 Compatibility	G3	←	ITU-T Std. & Non-Std. (MGCS)
2 PSTN Line Port	Yes	←	
3 Leased Line Port	No	←	
4 V.24 Line Port	No	←	
5 Modem Speed	33.6 - 2.4 kbps	←	With Automatic Fallback
6 Coding Scheme	MMR/MR/MH	←	
7 ECM	Yes	←	Conforms to ITU-T
8 Short Protocol	Yes (B, D)	←	
9 Transmission Speed	Approx. 3 sec	←	ITU-T Image No. 1 (A4, Std. Resolution)

10 Communication Resolution (pels / mm x lines / mm)	Transmission
	Std 8 x 3.85
	Fine 8 x 7.7
	S-Fine 8 x 15.4
	              16 x 15.4*
	Reception
	Std 8 x 3.85
	Fine 8 x 7.7
	S-Fine 8 x 15.4
	              16 x 15.4
		←	* Interpolated 16 pels/mm

Scanner Mechanism			
1 Scanning Device	CCD	←	
2 Scanning Speed			
Std.	2.8 sec	5.0 sec	Letter sized document
Std.	3.0 sec	5.3 sec	A4 sized document
Fine	5.0 sec	5.0 sec	Letter sized document
Fine	5.3 sec	5.3 sec	A4 sized document
S-Fine	10.1 sec	10.1 sec	Letter sized document
S-Fine	10.6 sec	10.6 sec	A4 sized document
3 Scanning Resolution (pel / mm x lines / mm)	Std. 8 x 3.85 Fine 8 x 7.7 S-Fine 8 x 15.4 16 x 15.4*	←	* Interpolated 16 pels/mm
4 Document Size (Max.)	10.1 x 78.7 in (257 x 2000 mm)	←	
5 Document Size (Min.)	5.8 x 5.0 in (148 x 128 mm)	←	
6 Effective Scanning Width	8.3 in (212 mm)	←	Letter size for USA and Canada
6 Effective Scanning Width	8.2 in (208 mm)	←	A4 size for Other Destinations
7 Reduction XMT	No	←	

Items	Description		Remarks
	UF-590 UF-790	UF-595 (Reference)	
8 ADF Capacity	50 sheets*	-	*For USA and Canada only, documents must be inserted by staggered feed (stairs-shape). Face Down A4 / Letter 0.0024", 12 lb (0.06 mm, 45 g/m^2) to 0.0039", 16 lb (0.10 mm, 60 g/m^2) Operating Environment 68°F (20°C), 50%RH
	30 sheets*	←	*For Other Destinations. Face Down A4 / Letter 0.0024", 12 lb (0.06 mm, 45 g/m^2) to 0.0039", 16 lb (0.10 mm, 60 g/m^2)
	20 sheets	←	Face Down A4 / Letter 0.0024", 12 lb (0.06 mm, 45 g/m^2) to 0.0048", 20 lb (0.12 mm, 75 g/m^2)
9 Collation Stack	Yes (Face Down)	←	
Printer Mechanism			
1 Recording Method	LP	←	
2 Recording Speed	6.5 ppm	5.4 ppm	Letter sized paper
	6.2 ppm	5.1 ppm	A4 sized paper
3 Recording Resolution			
Copy, Fax	406 x 391 dpi	←	
PC Printing Data	600 x 600 dpi 300 x 300 dpi	←	
4 Recording Paper Size	Letter / A4 / Legal	←	
5 Effective Printing Width	8.2 in (208 mm)	←	Letter size for USA and Canada
	8.0 in (202 mm)	←	A4 size for Other Destinations
6 Recording Paper Capacity	250 sheets	←	A4 / Letter / Legal (20 lb / 75 g/m^2)
7 Collation Stack	Yes	←	Memory Collation The Tray capacity is up to 100 sheets
8 Consumables			See Consumables Section
Memory / Clock			
1 Standard Memory	2 MB (120 pages)	1 MB (60 pages)	ITU-T Image No. 1 (A4, Std. Resolution)
2 Memory Backup	Yes	←	
3 Document Memory type	Flash ROM	←	
4 Clock Backup	30 minutes	1 year	Use of a Gold Capacitor

Items		Description UF-590 UF-790	UF-595 (Reference)	Remarks
Copy Quality				
1	Halftone (Tx)	Yes*	Yes	64-Level Error Diffusion * Halftone (S-Fine) only with the Resolution key
2	Super Fine (Tx & Rx) dpi x lpi (pels / mm x lines / mm)	406 x 391* (16 x 15.4)	←	* Interpolated 16 pels/mm
3	Original Contrast Selection (Tx)	Yes	←	3-Levels
4	Smoothing (Rx)		←	With Auto Picture / Text Recognition
	Fax, Copy	Yes	←	
	PC Printing Data	No	←	
Power Supply				
1	Power Requirement	108 - 132 VAC, 47 - 63 Hz, Single Phase		100 VAC Power Supply
		198 - 255 VAC, 47 - 63 Hz, Single Phase		200 VAC Power Supply
2	Power Consumption			
	Standby			
	Sleep Mode	1.2 Wh	0.7 Wh	
	ES=On	6 Wh	7 Wh	
	ES=Off	21 Wh	23 Wh	100 VAC Power Supply ES: Energy Saver
	Transmission	17 W	17 W	
	Reception	460 W	450 W	
	Copy	470 W	450 W	
	Maximum	470 W	470 W	
	Standby			
	Sleep Mode	2.4 Wh	0.8 Wh	
	ES=On	6.5 Wh	7 Wh	
	ES=Off	22 Wh	25 Wh	200 VAC Power Supply ES: Energy Saver
	Transmission	17 W	17 W	
	Reception	480 W	450 W	
	Copy	480 W	450 W	
	Maximum	490 W	470 W	
Environment				
1	Temperature			
	Operation	50 to 95°F (10 to 35°C)		
	Storage	-4 to 104°F (-20 to 40°C)		
	Transport (Max. 72 hours)	-4 to 122°F (-20 to 50°C)		
2	Relative Humidity			
	Operation	15 to 70% RH		
	Storage	5 to 85% RH		
	Transport (Max. 480 hours)	15 to 85% RH		

Items	Description UF-590 UF-790	Description UF-595 (Reference)	Remarks

Standards

Items	UF-590 UF-790	UF-595 (Reference)	Remarks
1 PSTN	FCC Part 68 Industry Canada No. CS-03		
2 Safety	UL1950 (UL60950 3rd edition) CSA C22.2 No.950		
3 EMI	Class B computing device in FCC Part 15		

Construction

Items	UF-590 UF-790	UF-595 (Reference)	Remarks
1 Dimensions (W x D x H)	14.6 x 18.0 x 9.8 in (370 x 457 x 250 mm)	14.6 x 16.3 x 9.8 in (370 x 413 x 250 mm)	Excluding projections
2 Weight (Excluding paper)	20 lb (9.0 kg)	18.7 lb (8.5 kg)	Excluding consumable supplies and options

Attachment & Accessories

Items	UF-590 UF-790	UF-595 (Reference)	Remarks
Toner Cartridge	Yes (1)	Yes (1)	UG-5510 for UF-790
Operating Instructions	Yes (1)	Yes (1)	
CD-ROM	Yes (1) (PDMS)	No	
Power Cord	Yes (1)	Yes (1)	
Tel Line Cable	Yes (1)	Yes (1)	
Doc. Tray (Rx)	Yes (1)	Yes (1)	

Consumables

Items	UF-590 UF-790	UF-595 (Reference)	Remarks
1 Process Type	Toner Cartridge	←	
2 Yield (3% Black, ITU-T Image No. 1 Chart)	Approx. 7,500 pages	←	Multi Copy Mode Operation Environment 68°F (20°C), 50% RH, using A4 paper.
3 Low Toner Warning	Yes	←	Magnetic Sensor

Options

Items	UF-590 UF-790	UF-595 (Reference)	Remarks
1 Cassette & Deck 250 sheets	Yes	←	A4 / Letter / Legal (20 lb / 75 g/m^2)
2 Document Memory	Yes 2 / 4 / 8MB	Yes 1 / 2 / 4MB	Flash Memory
3 Page Memory	No	←	D-RAM
4 Battery Backup 72 hours	No	←	
5 G3 Optional Communication Port	No	←	
6 Handset	Yes	←	Specific Destinations only
7 V.24/Encryption Interface	No	←	
8 PDL	No	←	
9 Parallel Port Interface	Standard	Yes	
	Printer Interface (GDI)	Standard	Yes	
	Scanner Interface (TWAIN)	Standard	Yes	
	Class 2 Fax Modem Interface	Standard	No	
	PC Fax Interface (MGCS)	Standard	No	
	PC Fax Interface (LaserFAX)	No*	Yes	*HydraFax / LaserFAX Not Supported
	Document Manager	Standard	No	
	MFP Utilities	Standard	No	

Items	Description UF-590 UF-790	Description UF-595 (Reference)	Remarks
Languages			
Control Panel Function Label LCD Display Printouts Operating Instructions	English English English English English	←	English, C-French, Spanish can be selected for USA, Canada. Determined by Destinations.
Multi-Task Operation			
1 Multi Task Operation	Yes	←	
2 Direct XMT Reserve	Yes	←	
3 Memory XMT Reserve	Yes	←	
4 Number of Memory Job Files	10 files	←	
Dialing/Telephone Features			
1 One-Touch Keys	28	24	
2 One-Touch / Program Keys	4	4	
3 One-Touch Auto Dialers	32	28	
4 Abbr. Auto Dialers	100	72	
5 Total Auto Dialers	132	100	
6 Max. Tel Number Digits	36	←	
7 Max. Station Name Characters	15	←	
8 Directory Search Dialing	Yes	←	With Directory Search key
9 Full Number Dialing (Buffered Dialing)	Yes	←	Max. 12 stations
10 Direct Dialing (Monitor Dialing)	Yes	←	Voice mode (Monitor Dialing Mode) Requires to press START to start fax communication. Automatic Redialing is not available.
11 Automatic Redialing	Yes	←	
12 Manual Redialing	Yes	←	
13 Chain Dialing (Hybrid Dial)	Yes	←	On Monitor Dialing mode only
14 Line Monitor Speaker	Yes	←	
15 Pulse / Tone Dialing	Yes	←	10 pps / DTMF
16 Pulse to Tone Change	Yes	←	
17 Flash Key	Yes	←	
18 External Telephone Jack	1	2	Handset or External Telephone
Transmission Features			
1 Direct Transmission	Yes	←	ADF Transmission
2 Memory Transmission	Yes	←	Page Retransmission
3 Quick Memory Transmission	Yes	No	Dialing after 1st page stored
4 Multi-Station Transmission (Sequential Broadcasting)	Yes (Max.144)	Yes (Max.112)	

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Items	Description		Remarks
	UF-590 **UF-790**	**UF-595** **(Reference)**	
5 Direct Deferred Transmission	Yes	←	ADF Deferred Transmission
6 Deferred Memory Transmission	Yes	←	Max. 10 timers
7 Deferred Multi-Station Transmission	Yes (Max.144)	Yes (Max.112)	Max. 10 timers
8 Priority Direct Transmission	Yes	←	Priority ADF Transmission
9 Priority Memory Transmission	No	←	
10 Batch Transmission	No	←	
Reception Features			
1 Substitute Reception	Yes	←	
2 Fixed Reduction	Yes	←	LTR / A4: 70 - 100%, LGL: 80 -100% (in 1% Steps), Top & Center Alignment
3 Auto Reduction	Yes	←	LTR / A4: 70 - 100%, LGL: 80 -100% (in 1% Steps), Top & Center Alignment
4 Overlap Printing	Yes	←	Page End Approx. 0.39 in (10 mm)
5 Receive to Memory	Yes	←	
6 Distinctive Ring Detector (DRD)	Yes	←	Specific Destinations only
Receive Control			
1 Fax / Tel Auto Switch	Yes	←	Specific Destinations only
2 Silent Reception	No	←	
3 External TAM Interface	Yes	←	Specific Destinations only
4 Remote Reception	Yes (DTMF)	←	Specific Destinations only
Polling			
1 Polling	Yes	←	
2 Turnaround Polling	No	←	
3 Multi-Station Polling	Yes (Max.144)	Yes (Max.112)	
4 Deferred Polling	Yes	←	Max. 10 timers
5 Deferred Multi-Station Polling	Yes (Max.144)	Yes (Max.112)	Max. 10 timers
6 Direct Polling Tx	No	←	
7 Memory Polling Tx	Yes	←	1 File
8 Preset Polling Password	Yes	←	
9 Temporary Polling Password	Yes	←	
10 Continuous Polling	Yes	←	

Items	Description		Remarks
	UF-590 UF-790	UF-595 (Reference)	
Convenience			
1 Panel Display	Yes	←	20 x 2 Alphanumeric LCD
2 Voice Contact	No	←	
3 Edit File Mode	Yes	←	With View Mode
4 Incomplete File Save	Yes	←	With View Mode
5 Automatic Cover Sheet	Yes	←	
Copy Features			
1 Single Copy	Yes	←	
2 Multiple Copy	Yes	←	Multi Sort Copy only
3 Reduction Copy	Yes	←	
4 Copying Resolution dpi x lpi (pels / mm x lines / mm)	406 x 391* (16 x 15.4)	←	* Interpolated 16 pels/mm
Certainty			
1 Verification Stamp	Yes	←	
2 Header / Total Page Print	Yes	←	
3 Transaction Journal	Yes	←	32 Transactions / with View Mode
4 Comm. Journal	Yes	←	With Image
5 Last Ind. XMT Journal	Yes	←	
6 Power Failure Report	No	←	
List Printouts			
1 One-Touch List	Yes	←	
2 ABBR. No. List	Yes	←	
3 Program List	Yes	←	
4 Directory Search List	Yes	←	
5 Fax Parameter List	Yes	←	
6 File List	Yes	←	With View Mode
7 Ind. XMT Journal	Yes	←	
8 Directory Sheet	Yes	←	
9 Character Code List	No	←	
Identifications			
1 Logo	Yes	←	25 Characters
2 Multiple Logo	No	←	
3 Character ID	Yes	←	16 Characters
4 Numeric ID	Yes	←	20 Digits
Special Communications			
1 Password XMT / RCV	Yes	←	Closed Network
2 Selective Reception	Yes	←	TSI Check
3 Relay XMT Request	No	Yes	
4 Relay XMT Center	No	←	Network (Via a Center Station)
5 Confidential XMT / Polling	No	←	
6 Confidential Center	No	←	
7 Mailbox XMT / Polling	Yes	←	
8 Mailbox Center	10 Boxes	←	

Items	Description UF-590 UF-790	UF-595 (Reference)	Remarks
9 File XMT	No	←	
10 Fax Forward	Yes	←	Received File Transfer
11 Auto Fax Archive	Yes	←	NYSE Feature Specific Destinations only
12 Sub-Address XMT	Yes	←	T. Routing
13 Sub-Address RCV	No	Yes	T. Routing with PC interface
14 OMR-XMT	No	←	
Others			
1 Access Code	Yes	←	
2 PIN Code Access	Yes	No	For USA / Canada / Hong Kong only PBX Access Code
3 Intelligent Redial (AI)	Yes	←	2 Files
4 Department Code	No	←	
5 Energy Saver Mode	Yes	←	
6 Daylight Saving Time	Yes	←	USA, Canada and Germany only
7 Self Diagnostic Function	Yes	←	
8 Remote Diagnostic Function	Yes	←	Specific Destinations only
9 Check & Call Function	Yes	←	
Firmware Update / Download			
1 Remote Update	Yes	No	Using G3 Protocol
2 Local Update			
Memory Card (FROM)	Yes	←	
Parallel Port	Yes	No	USA only
3 Download to FROM Card	Yes	←	

1.2. Printer Function

Items	Description UF-590 UF-790	Description UF-595 (Reference)	Remarks
Interface			
1 Centronics Parallel I/F (IEEE-1284)	Standard*	Yes (OP)	*ECP Mode
2 LAN (Network)	No	←	
3 USB Port	No	←	
4 IEEE-1394	No	←	
Printer Function			
1 Printing Size	Letter / A4 / Legal	←	
2 Bypass	No	←	
3 Stapling	No	←	
4 Printing Resolution	600 dpi	←	
5 OS	Win 9x / Me / NT 4.0 / 2000	←	
6 GDI	Yes	←	MH Coding
7 PDL (PCL6)	No	←	
8 PDL (PostScript 2)	No	←	
9 Duplex Printing	No	←	
10 Collation Stack	Yes	←	Printer Driver setting
11 Status Monitor	Yes	No	Win 9x / Me / NT 4.0 / 2000 : Local Connection
12 Network Printing	No	←	
13 Network Status Monitor	No	←	
14 Smoothing	No	←	
15 Applicable PC	IBM PC, AT or Compatible	←	
16 Multi-Task Operation			
Printing while Fax-XMT from Memory	Yes	←	
Printing while Fax-RCV into Memory	Yes	←	
Fax-XMT from Memory while Printing	Yes	←	
Fax-RCV into Memory while Printing	Yes	←	
17 Output to Separate Tray for Printing, Fax, Copy	No	←	
18 Font	No	←	
19 Security Print	No	←	
Scanning Function			
1 Halftone	Yes	←	64 Level Error Diffusion
2 Scanning Width	8.3 in (212 mm)	←	Letter size for USA and Canada
	8.2 in (208 mm)	←	A4 size for Other Destinations
3 Scanning Resolution	400 dpi*	←	* Interpolated

Items	Description		Remarks
	UF-590 **UF-790**	**UF-595** **(Reference)**	
4 Driver	TWAIN	←	
5 2-Sided Scanning	No	←	

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1.3. External View

REAR VIEW

(For USA only)

Product complies with DHHS Rules 21 CFR Subchapter J in effect at date of manufacture.

Manufacturer's name and address   Factory ID
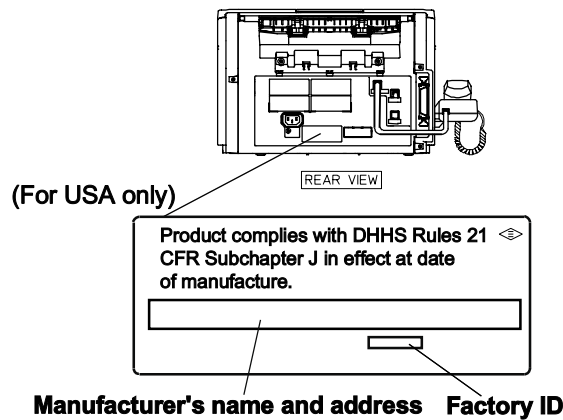
• **DANGER** : Invisible laser radiation when open and interlock defeated. AVOID DIRECT EXPOSURE TO BEAM.
• **CAUTION** : Invisible and hazardous laser radiation when interlocks defeated. AVOID EXPOSURE TO BEAM.
• **ATTENTION** : Rayonnement laser invisible dangereux lorsque la sécurité est neutralisée. EXPOSITION DANGEREUSE AU FAISCEAU.
• **VORSICHT** : Unsichtbare Laserstrahlung, wenn Sicherheitsverriegelung überbrückt. NICHT DEM STRAHL AUSSETZEN.
• **PELIGRO** : Cuando se invalida el bloqueo,se producen radiaciones invisibles de láser. EVITÉSE LA EXPOSICIÓN DIRECTA A TALES RAYOS.
• **VARO!** : Näkymätöntä ja vaarallista lasersäteilyä suojalukitus ohitettaessa. Vältäsuoraa altistumista säteelle.
• **ADVARSEL** : USYNLIG LÄSERSTRALING NÄR SIKKERHEDSAF-BRYDERE ER UDE AF FUNKTION. UNDGÅ UDSETTELSE FOR STRÅLING.
• **ADVARSEL** : USYNLIG LÄSERSTRALING NÄR SIKKERHEDS-LÄS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
• **VARNING** : OSYNLIG LASERSTRÅLNING NÄR SPÄRRAR.ÄR URKOPPLADE. STRÅLEN ÄR FARLIG.
• **注意** : 为防止激光照射, 当连接本机时, 请勿暴露在光柱下.
• **주의** : 연결장치가 고장 났을 때에는 눈에 보이지않고 위험한 레이저 방사선이 빛에 직접 닿지않도록 해 주십시오.

FBS8902

TOP VIEW

LEFT SIDE VIEW

3 inch (75mm)   14.6 inch (370mm)

FRONT VIEW

16.9 inch (430mm)   9.8 inch (250mm)

7 inch (177mm)   LTR: 4.8 inch (121mm)   13.2 inch (336mm)   3.6 inch (91mm)
A4: 5.4 inch (138mm)

LTR: 28.5 inch (725mm)   A4: 29.2 inch (742mm)

RIGHT SIDE VIEW

15
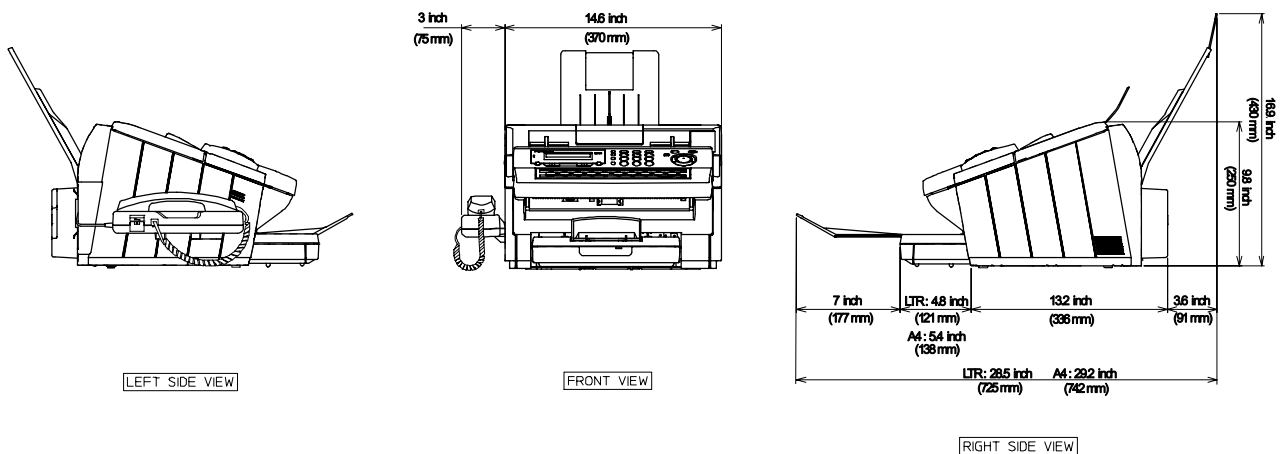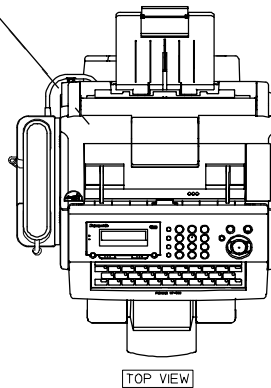
1.3.1. Serial Number Contents

All units manufactured beginning in April 2001* will utilize this New Serial Number format. The contents of the 11-digit Serial Number is as follows:

Note:

Model UF-590 / 790 will utilize this format starting with first production.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Sequential Production Number
5-Digit Sequential Production Number

00001 ~ 99999 = 1 ~ 99,999 units
A0001 ~ Y9999 = 100,000 ~ 329,976 units
(Letters "I" and "O" are skipped)

Model Number and Destination Code (Main Unit)
3-Digit number or alphanumeric representation
(Except Letters "I" and "O")

For Example:
19E = UF-585-AU   2AU = UF-790-AU
1AZ = UF-595-AU   2AT = UF-590-AB

Production Facility

Production Year
Starting with Year 2001, the last 2-digits of the year is represented as: A ~ T

A : 01 (2001)   K : 11 (2011)
B : 02   L : 12
C : 03   M : 13
D : 04   N : 14
E : 05   O : 15
F : 06   P : 16
G : 07   Q : 17
H : 08   R : 18
I : 09   S : 19
J : 10 (2010)   T : 20 (2020)

Production Month

A : January   G : July
B : February   H : August
C : March   I : September
D : April   J : October
E : May   K : November
F : June   L : December

1.4. Control Panel

For USA and Canada

Panafax UF-790

For Other Destinations

Panafax UF-590

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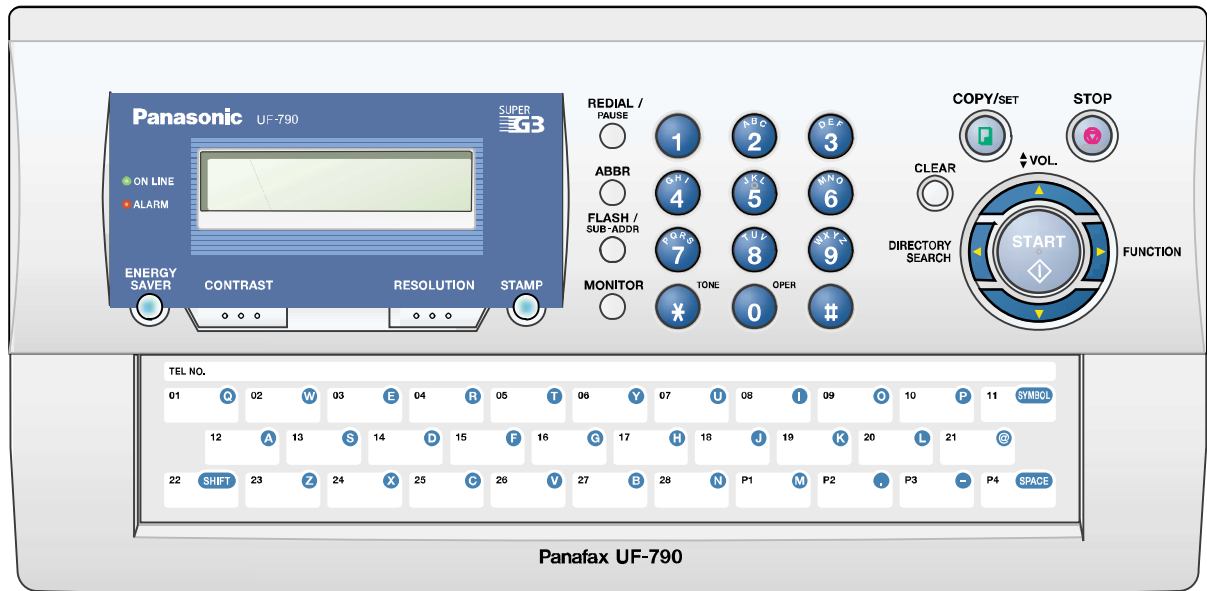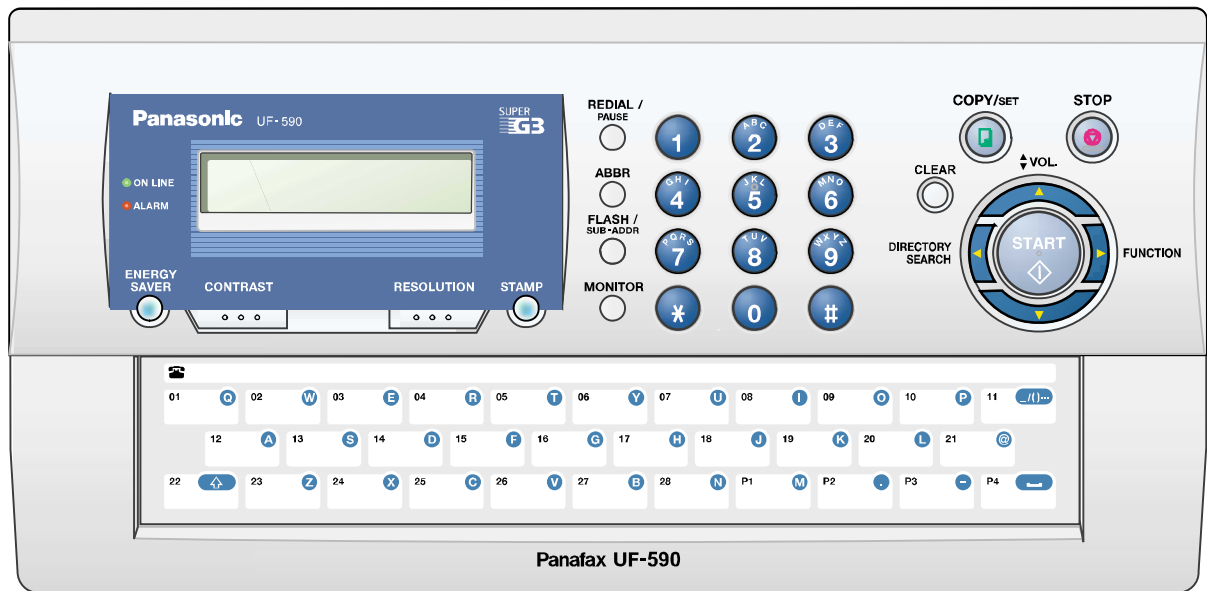
2 Disassembly Instructions

2.1. General Disassembly Flowchart

Flowchart components:

- Right Cover (102) 2.2.2
- Paper Feed Solenoid (531) 2.2.11
- Clutch Gear Assy 2.2.11
- Paper Feed Roller (518) 2.2.11
- Printer Grease Points 2.2.21
- Power Supply Unit (1002) 2.2.13
- Thermistor Assy (728) 2.2.14
- Fuser Unit (701) 2.2.14
- Fuser Lamp (732) 2.2.15
- Exit Roller (719) 2.2.15
- Fuser Roller (709) 2.2.15
- Pressure Roller (706) 2.2.15
- Printer Motor (626) 2.2.12
- Control Panel Chassis (201) 2.2.3
- PNL1 PC Board (1005) 2.2.3
- MJR PC Board (1003) 2.2.13
- Rear Chassis (505) Assy 2.2.16
- Transfer Guide (601) 2.2.17
- Feed Roller (526) 2.2.17
- SNS1 PC Board (1008) 2.2.16
- SNS2 PC Board (1010) 2.2.20
- Printer Cover (106) 2.2.12
- Rear Cover (105) 2.2.12
- Bias Transfer Roller (604) 2.2.19
- Toner Sensor (513) 2.2.18
- Transmit Motor (324) 2.2.7
- Recording Paper Tray Assy (1107) 2.2.1
- Front Cover (104) 2.2.2
- Open Control Panel Unit
- Transmit Guide (301) Assy 2.2.4
- Eject Roller (303) 2.2.6
- Laser Unit (512) 2.2.18
- SNS3 PC Board (1009) 2.2.18
- Paper Cassette 2.2.1
- SNS4 PC Board (1007) 2.2.10
- ILS PC Board (1006) 2.2.10
- SC PC Board (1001) 2.2.10
- Left Cover (103) 2.2.2
- Scanning Glass (308) 2.2.4
- Scanner Block (321) 2.2.8
- ADF Roller (331) 2.2.8
- A4 LED Array (329) 2.2.9
- Feed Roller (302) 2.2.9
- Stamp Solenoid (327) 2.2.5

2.2. Disassembly Instructions

2.2.1. Power Cord (1108), Telephone Line Cable (1109), Recording Paper Tray Assembly (1107), Paper Cassette

(1) Disconnect the **Power Cord** (1108).
(2) Disconnect the **Telephone Line Cable** (1109).

(3) Remove the **Recording Paper Tray Assembly** (1107).

(4) Remove the **Paper Cassette**.

2.2.2. Left Cover (103), Right Cover (102), Front Cover (104), Speaker (117), Separation Rubber (207)
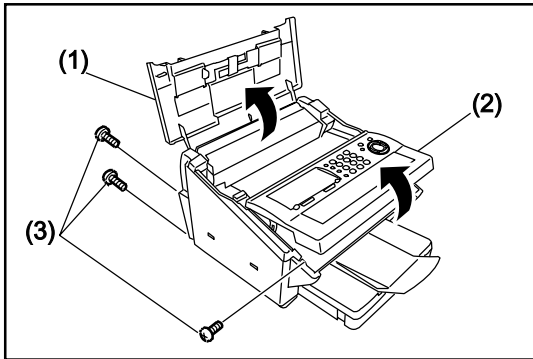
(1) Open the **Printer Cover** (106).
(2) Open the Control Panel Unit.
(3) 3 **Silver Screws** (B1).
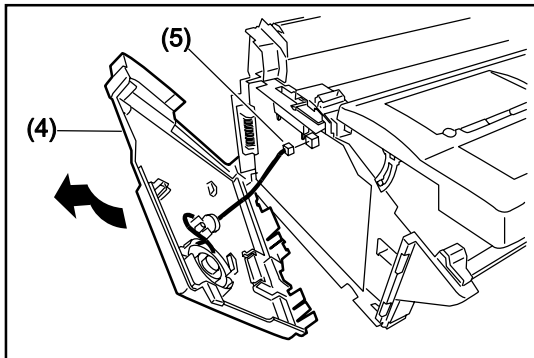
(4) Remove the **Left Cover** (103).
(5) Disconnect **Connector CN9** on the **SC PC Board** (1001).
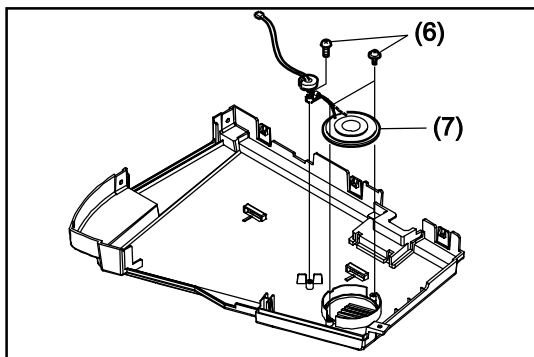
(6) 2 **Screws** (C2) and 1 **Screw** (1Y).
(7) Remove the **Speaker** (117).
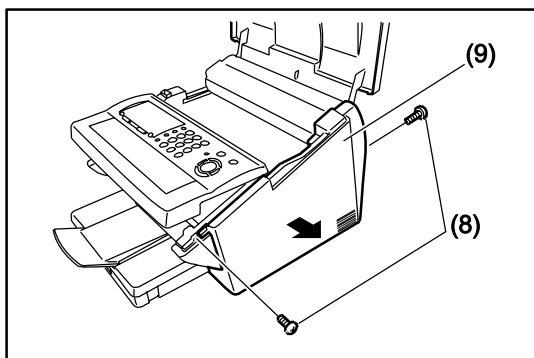
(8) 2 **Silver Screws** (B1).
(9) Remove the **Right Cover** (102).
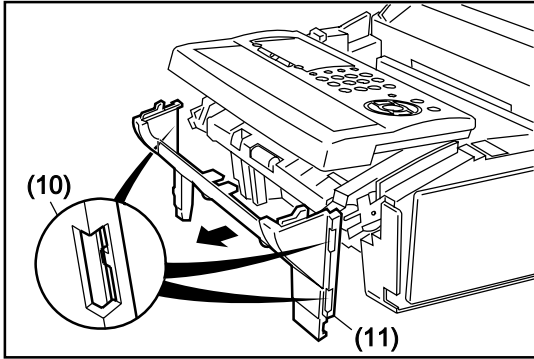
(10) Release 3 Latch Hooks.
(11) Remove the **Front Cover** (104).

<Replacing & Cleaning Separation Rubber>
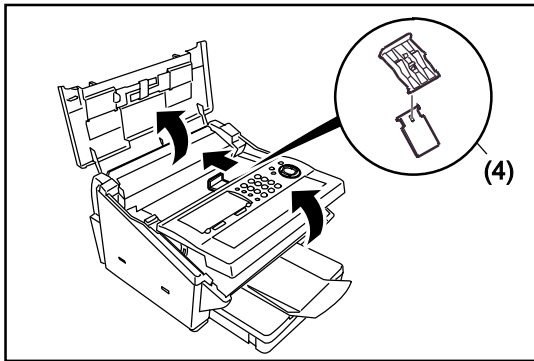
(1) Open the Control Panel Unit.
(2) Open the **Printer Cover** (106).
(3) Remove the **Separation Rubber Holder Assy** (202).
(4) Replace with a new **Separation Rubber** (207).
(5) Clean the **Separation Rubber** (207) with a soft cloth, soaked with isopropyl alcohol.

2.2.3. Control Panel Unit, PNL1 PC Board (1004)
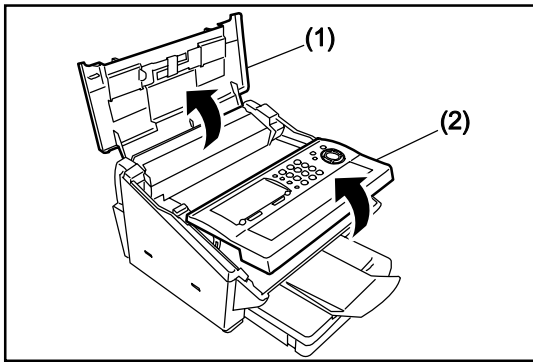
(1) Open the **Printer Cover** (106)
(2) Slightly open the **Control Panel Unit**.
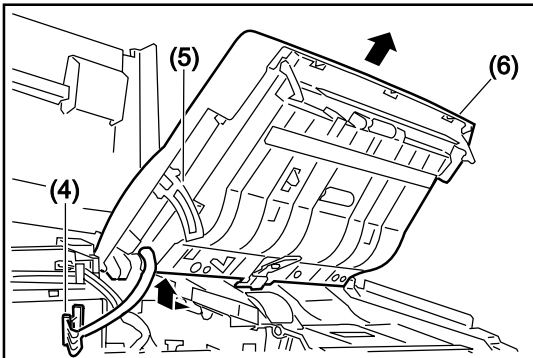
(3) Remove the **Left Cover** (103) and the **Right Cover** (102). (Refer to 2.2.2.)
(4) Disconnect **Connector CN14** on the **SC PC Board**.
(5) Release the **Stopper Latch** (210) and open the Control Panel Unit.
(6) Remove the **Control Panel Unit**.
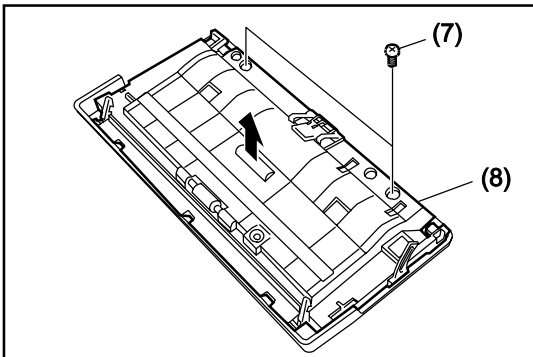
(7) 2 **Screws** (19).
(8) Remove the **Control Panel Chassis** (201) **Assembly**.

Note:
If noise occurs while scanning, clean the **Roller Shaft 2** (235) and the **Feed Pinch Roller** (236) shaft hole with isopropyl alcohol.
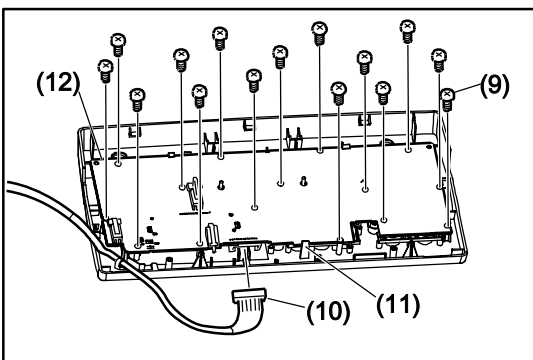
(9) 15 **Screws** (7B).
(10) Disconnect **Connector CN50** on the **PNL1 PC Board**.
(11) Release 1 Latch Hook.
(12) Remove the **PNL1 PC Board** (1004).

2.2.4. Transmit Guide (301) Assembly, Scanning Glass (308)
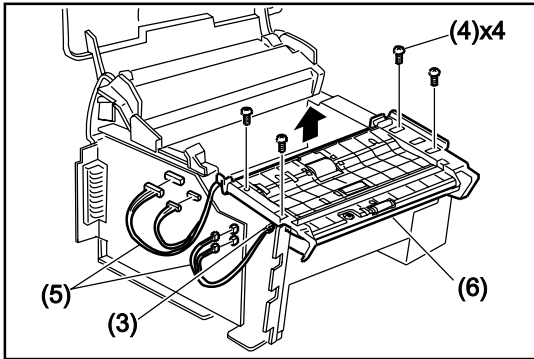
(1) Remove the **Left Cover** (103), **Right Cover** (102), and **Front Cover** (104) (Refer to 2.2.2.).
(2) Remove the **Control Panel Unit** (Refer to 2.2.3.).
(3) Release the Harnesses from the clamps.
(4) 4 **Screws** (19).
(5) Disconnect 4 **Connectors** (**CN1, 3, 5** and **7**) on the **SC PC Board**.
(6) Remove the **Transmit Guide** (301) **Assembly**.
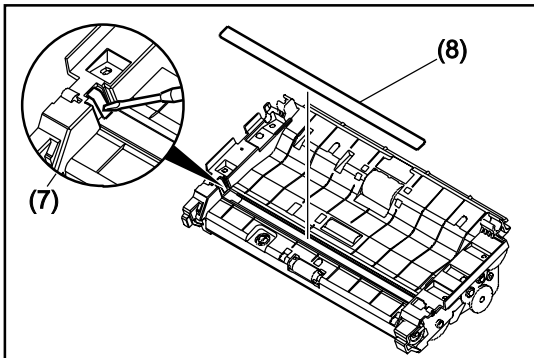
(7) Carefully release the Latch Hook using a Blade-tip Screwdriver.
(8) Remove the **Scanning Glass** (308).

<Cleaning Scanning Glass>
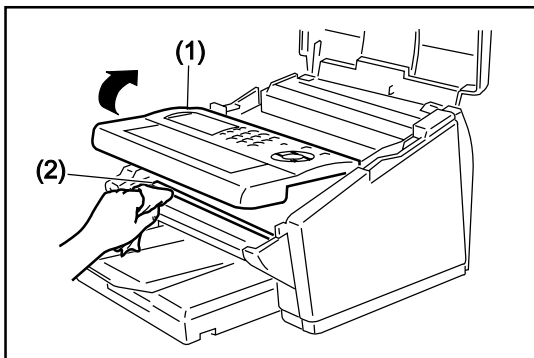
(1) Open the Control Panel Unit.
(2) Clean the **Scanning Glass** (308) with a soft cloth, soaked with isopropyl alcohol.

<Cleaning Feed Roller, Eject Roller, ADF Roller>
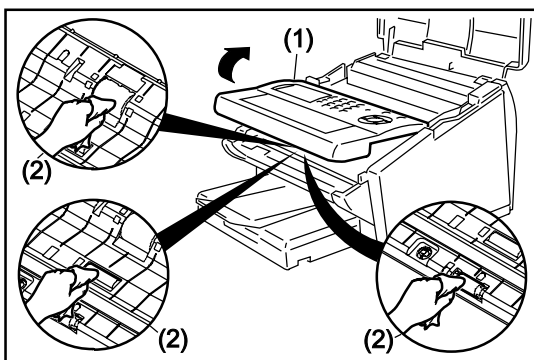
(1) Open the Control Panel Unit.
(2) Clean the **Feed Roller** (302), **Eject Roller** (303) and **ADF Roller** (331) with a soft cloth, soaked with isopropyl alcohol.

2.2.5. Stamp Assembly, Stamp Solenoid (327)
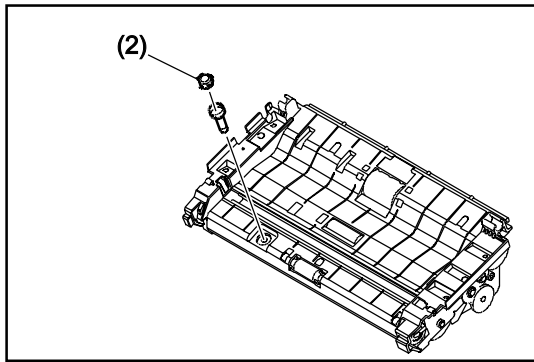
(1) Remove the **Transmit Guide** (301) **Assembly** (Refer to 2.2.4.).

(2) Remove the **Stamp Assembly** (325, 326).
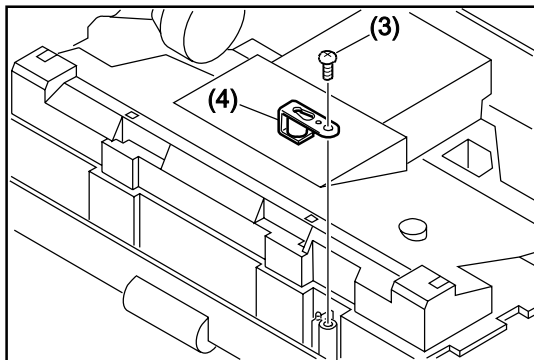
(3) 1 **Screw** (19).

(4) Remove the **Stamp Solenoid** (327).

2.2.6. Eject Roller (303)
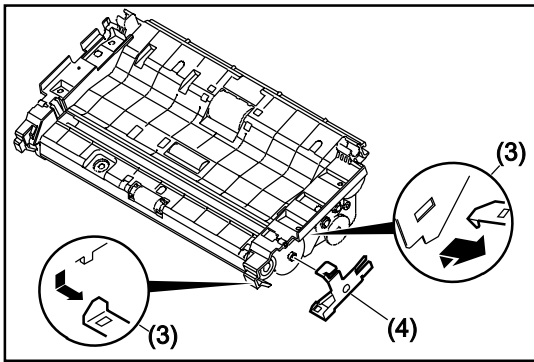
(1) Remove the **Transmit Guide** (301) **Assembly** (Refer to 2.2.4.).
(2) Remove the **Stamp Assembly** (325, 326) (Refer to 2.2.5.).
(3) Release 2 Latch Hooks.
(4) Remove the **Ground Plate** (317).
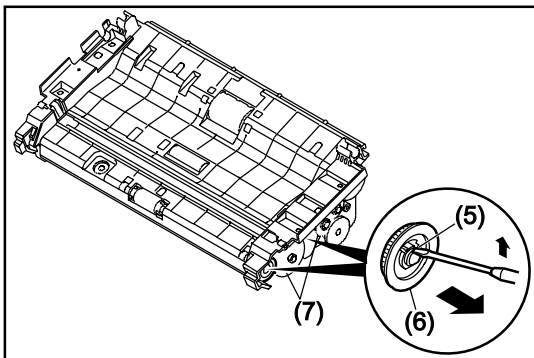
(5) Release the Latch Hook by using a small Blade-tip Screwdriver.
(6) Remove 2 **D25F Drive Gears** (332).
(7) Remove **D17 Gear** (313) and **D50 Gear** (314).
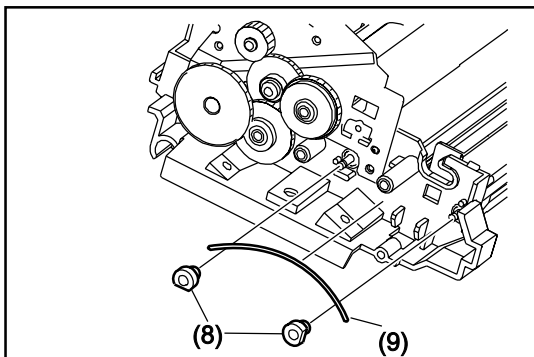
(8) Remove 2 **P6C Bushings** (342).
(9) Remove the **Roller Wire Spring** (343).
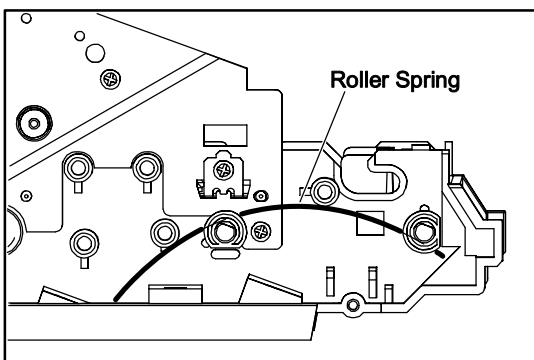
Roller Spring

Caution:
Reinstall the Roller Wire Spring (343) according to the illustration.
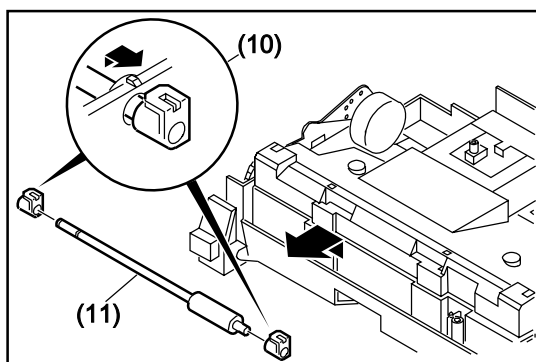
(10) Remove 2 **P6A Bushings** (316).
(11) Remove the **Eject Roller** (303).

2.2.7. Transmit Motor (324)
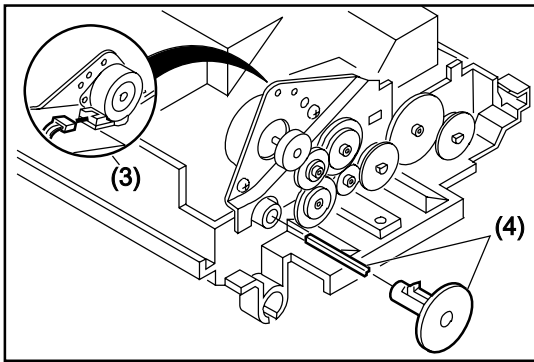
(1) Remove the **Transmit Guide** (301) **Assembly** (Refer to 2.2.4.).
(2) Remove the **Stamp Assembly** (325, 326) (Refer to 2.2.5.).
(3) Disconnect the **Connector** (1020) from the **Transmit Motor** (324).
(4) Remove the **ADF Gear** (305) and **ADF Angular Shaft** (338).
Caution:
When removing the ADF Gear, rotate the Transmit Motor Gear by hand until the Gear Latch Hook can be seen from the inside, under the Transmit Motor. Push down on the Latch Hook to release the ADF Gear.
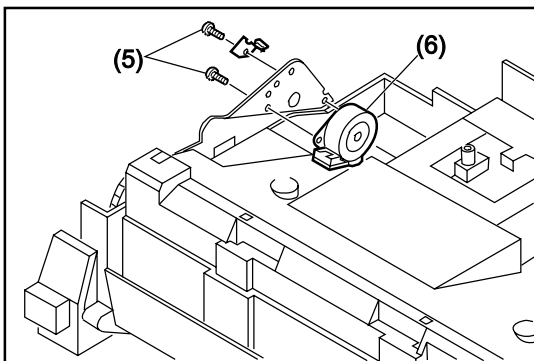
(5) 2 **Screws** (19).
(6) Remove the **Transmit Motor** (324).
Caution:
Reinstall the Transmit Motor (324) according to the direction shown in the illustration.
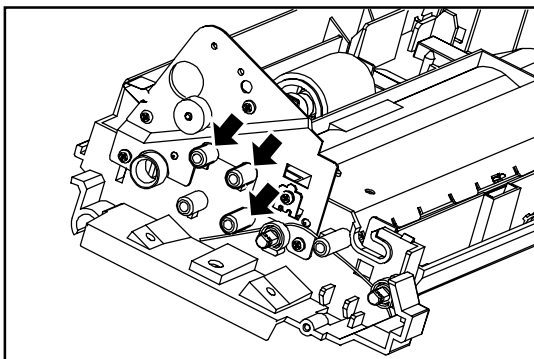
Caution:
Before reassembling, apply EM-50L Grease to the Gear Posts shown by the arrows in the illustration.

2.2.8. Scanner Block (321), Mirror 1 (334), Mirror 2 (335), Mirror 3 (336), ADF Roller (331)
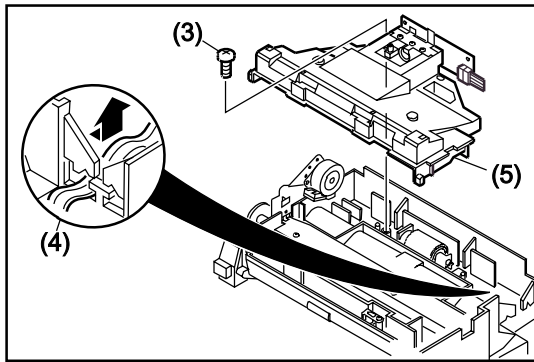
(1) Remove the **Transmit Guide** (301) **Assembly** (Refer to 2.2.4.).
(2) Remove the **Stamp Assembly** (325, 326) (Refer to 2.2.5.).
(3) 1 **Screw** (19).
(4) Remove the Harnesses from the hook.
(5) Remove the **Scanner Block** (321).
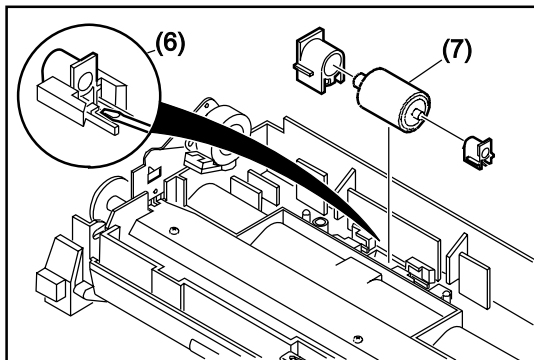
(6) Remove **P10** and **P6B Bushings** (315, 318) by using Blade-tip Screwdriver.
(7) Remove the **ADF Roller** (331).

<Cleaning Mirror 1, Mirror 2 and Mirror 3>
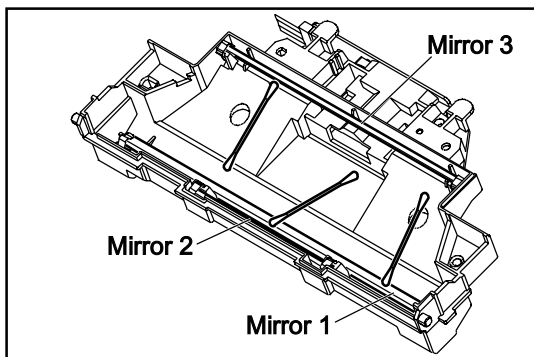
Clean **Mirror 1** (334), **Mirror 2** (335) and **Mirror 3** (336) with a soft cloth, soaked with isopropyl alcohol.

2.2.9. LED Array (329), Feed Roller (302)
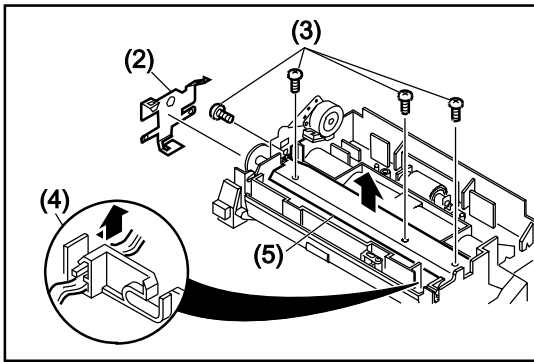
(1) Remove the **Scanner Block** (321)
(Refer to 2.2.8.).
(2) Remove the **Ground Plate** (317).
(3) 4 **Screws** (19).
(4) Release the Harness from the hook.
(5) Remove the **LED Bracket** (306) **Assembly**.
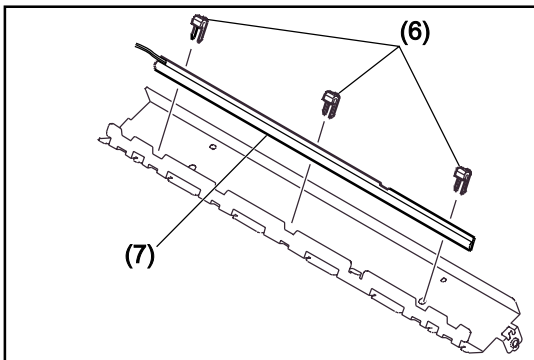
(6) Remove 3 **LED Clips** (307).
(7) Remove the **LED Array** (329).
   Caution:
   When reinstalling the LED Array, position the
   3 LED Clips at the appropriate locations.
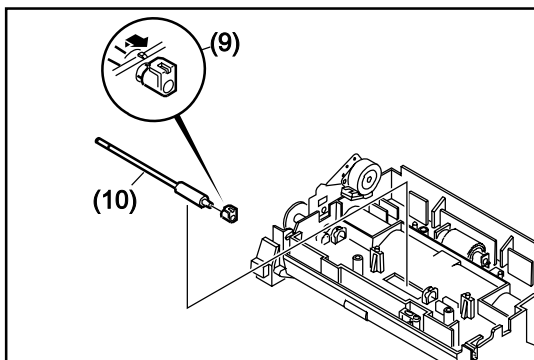
(8) Remove the **Gears, Bushings** and the **Roller Wire Spring**
(Refer to 2.2.6.).
(9) Remove 2 **P6A Bushings** (316).
(10) Remove the **Feed Roller** (302).

2.2.10. SC PC Board (1001), ILS PC Board (1006), SNS4 PC Board (1007)
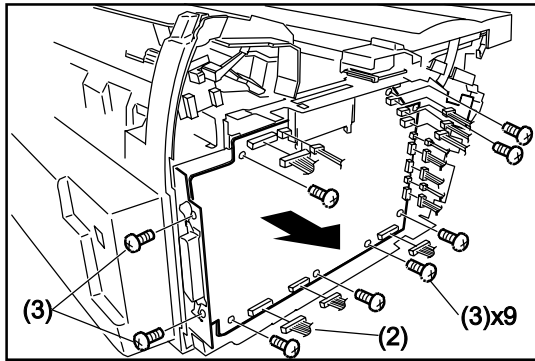
(1) Remove the **Left Cover** (Refer to 2.2.2.).
(2) Disconnect all **Connectors** on **SC PC Board**.
(3) 9 **Screws** (19).
(4) Remove the **SC PC Board** (1001).
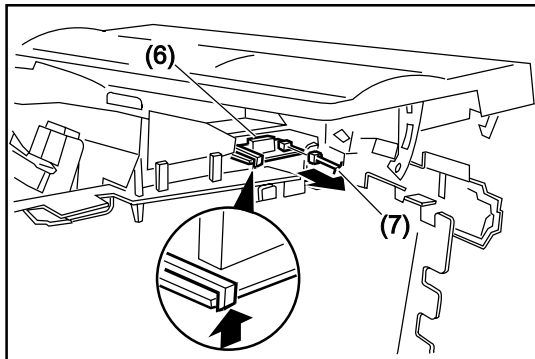
(5) Move all Harnesses away from the front of the Door Sensor.
(6) Release the Latch Hook and remove the **ILS PC Board** (1006).
(7) Disconnect **Connector CN73** on the **ILS PC Board** (1006).
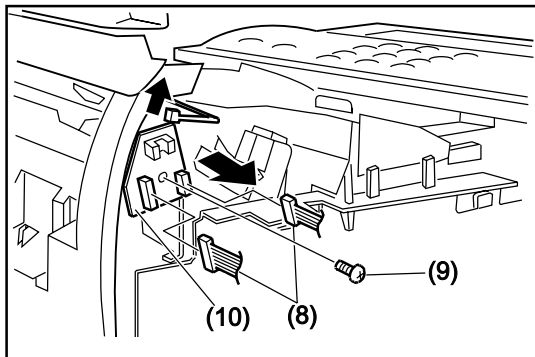
(8) Disconnect **Connectors CN85** and **87** on the **SNS4 PC Board**.
(9) 1 **Screw** (19).
(10) Lift up the **Paper Exit Actuator** (730) and remove the **SNS4 PC Board** (1007).

2.2.11. Paper Feed Solenoid (531), Clutch Gear Assembly, Paper Feed Roller (518)
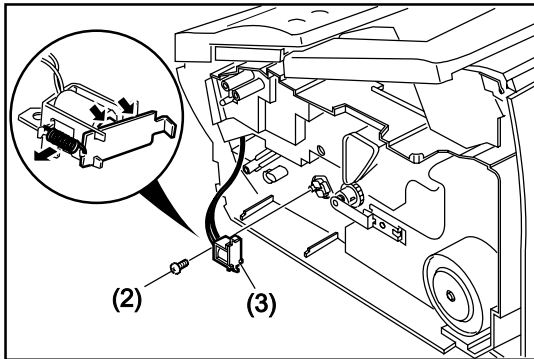
(1) Remove the **Right Cover** (102) (Refer to 2.2.2.).
(2) 1 **Screw** (19).
(3) Remove the **Paper Feed Solenoid** (531).

Note:
    If the Paper Feed Solenoid does not work properly due to dust, etc. remove the spring to disassemble and clean the magnet and plate as shown in the illustration.
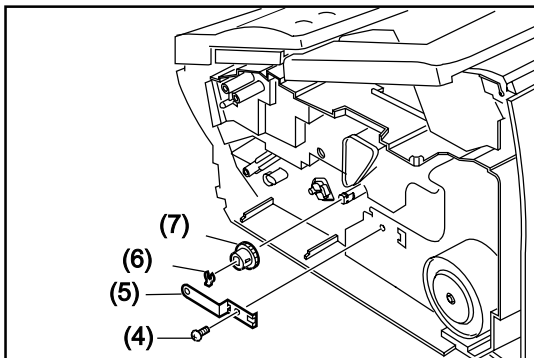
(4) 1 **Screw** (19).
(5) Remove the **Feed Roller Ground Spring** (628).
(6) Remove the **Snap Ring** (B9).
(7) Remove the **Clutch Gear Assembly**.
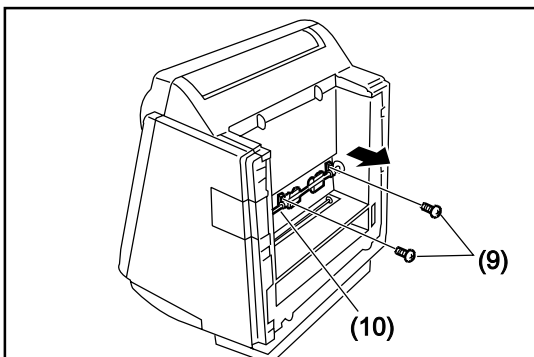
(8) Place the machine on its Rear side.
(9) 2 **Screws** (19).
(10) Remove the **Feed Roller Assembly**.
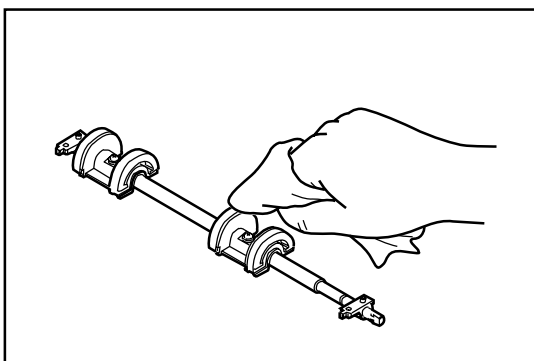
Clean the **Paper Feed Rollers** (518) with a soft cloth, soaked with isopropyl alcohol.
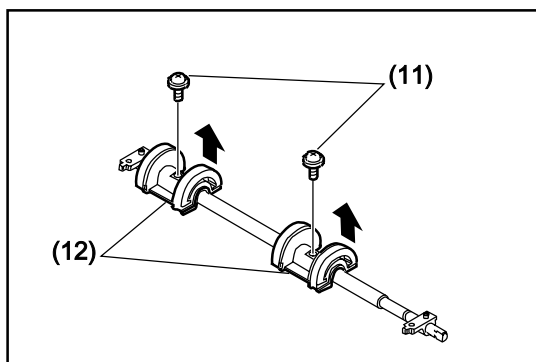
(11) 2 **Screws** (4N).
(12) Remove the **Paper Feed Rollers** (518).

2.2.12. Printer Cover (106), Rear Cover (105), Printer Motor (626)
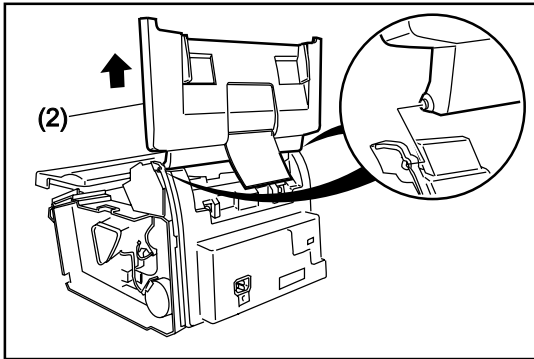
(1) Remove the **Left Cover** and the **Right Cover** (Refer to 2.2.2.).

(2) Release the hooks and remove the **Printer Cover** (106).
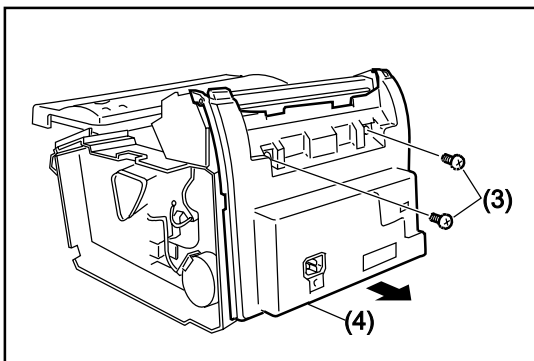
(3) 2 **Silver Screws** (B1).

(4) Remove the **Rear Cover** (105).
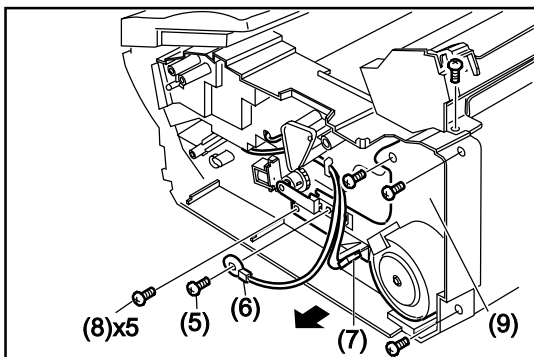
(5) 1 **Screw** (19).

(6) Remove the **Ground Wire** (542).

(7) Disconnect the **Connector** from the **Printer Motor**.

(8) 5 **Screws** (19).

(9) Remove the **Printer Motor Bracket** (616) **Assembly**.

Caution:
The Gears underneath may dislodge when the Motor Bracket is removed.
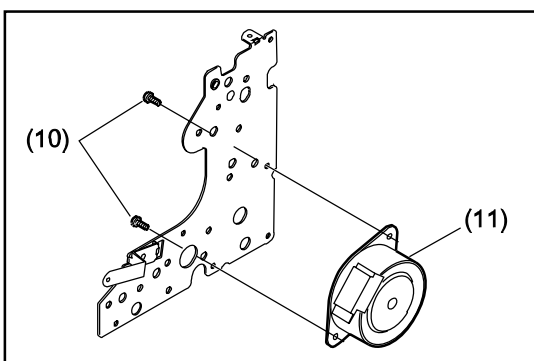
(10) 2 **Screws** (4N).

(11) Remove the **Printer Motor** (626).

2.2.13. MJR PC Board (1003), Power Supply Unit (1002)
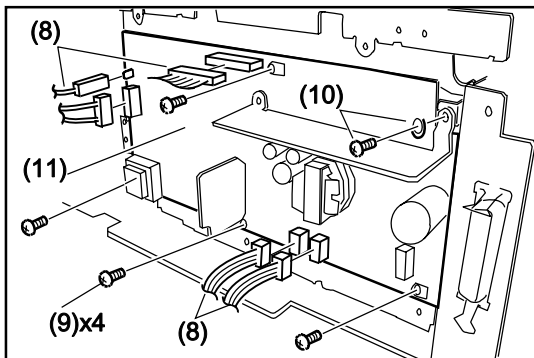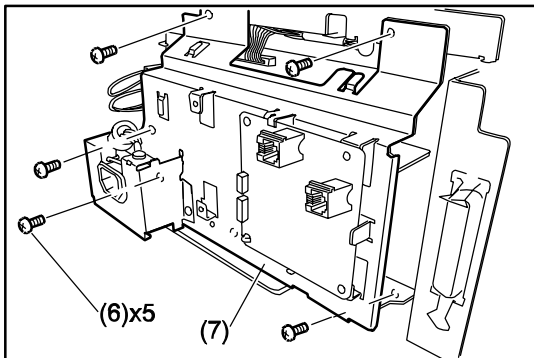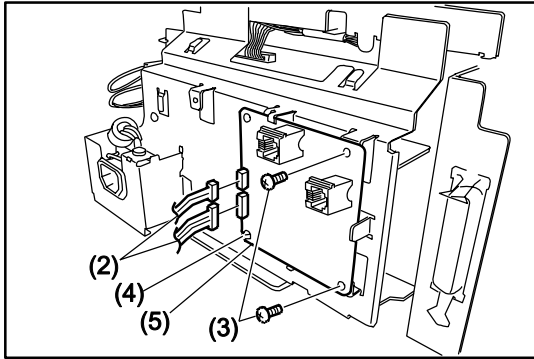
Caution:
Make sure the **Power Cord** (1108) is unplugged.

Note:
If removing only the **Power Supply Unit**, skip step (3), (4) and (5).

(1) Remove the **Rear Cover** (105) (Refer to 2.2.12.).

(2) Disconnect the **Connectors** (**CN28** and **29**) on the **MJR PC Board**.

(3) 2 **Screws** (19).

(4) Release the **Latch Hook of Locking Card Spacer** (405).

(5) Remove the **MJR PC Board** (1003).

(6) 5 **Screws** (19).

(7) Remove the **L Power Plate** (401).

(8) Disconnect the **Connectors** (**CN101, 102, 103, 201** and **202**) on the **Power Supply Unit** (1002).

(9) 4 **Screws** (19).

(10) 1 **Screw** (19) and 1 **Washer** (G8).

(11) Remove the **Power Supply Unit** (1002).

2.2.14. Fuser Unit, Thermistor Assembly (728)
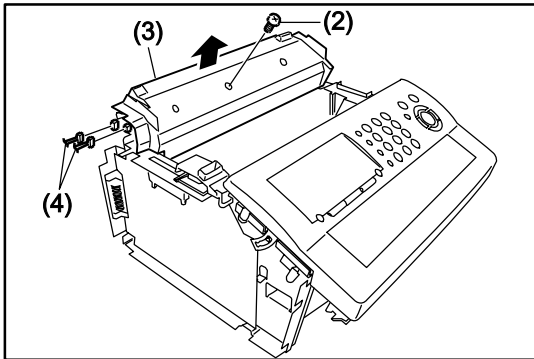
(1) Remove the **Rear Cover** (Refer to 2.2.12.).
(2) 1 **Screw** (19).
(3) Remove the **Fuser Top Cover** (733).
(4) Disconnect the **Connectors CN85** and **CN87** on the **SNS4 PC Board** (1007).
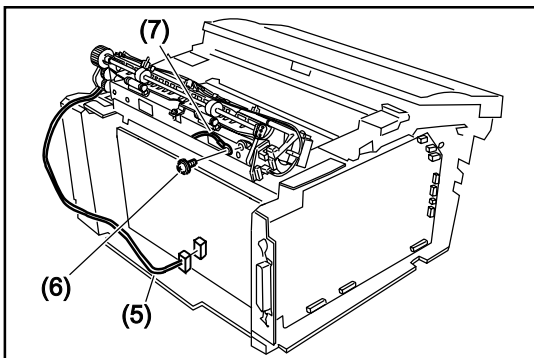
(5) Disconnect the **Connector CN102** on the **Power Supply Unit** (423).
(6) 1 **Screw** (4N).
(7) Remove the **FG1 Harness** (629).
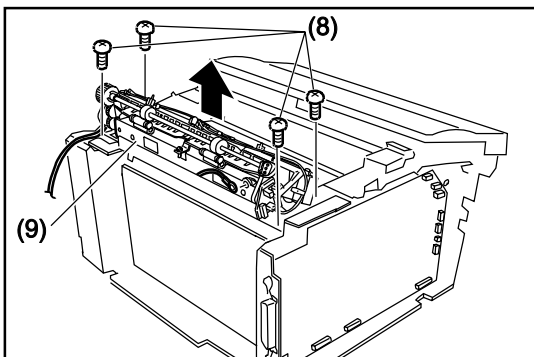
(8) 4 **Screws** (19).
(9) Remove the **Fuser Unit**.
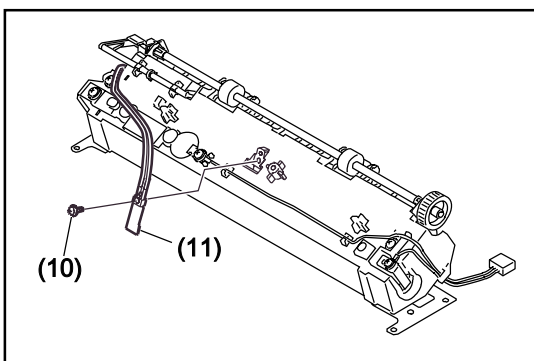
(10) 1 **Screw** (1Q).
(11) Remove the **Thermistor Assembly** (728).

2.2.15. Fuser Lamp (732), Exit Roller (719), Fuser Roller (709), Pressure Roller (706)
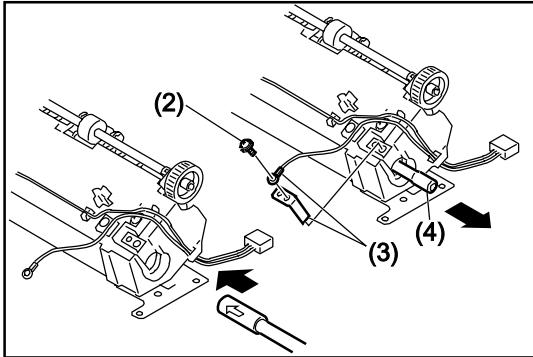
(1) Remove the **Rear Cover** (Refer to 2.13) and the **Fuser Unit** (Refer to 2.2.14.).

(2) 1 **Screw** (4N).

(3) Remove the **PSU-Fuser Harness** (1028) and **Fuser Lamp Terminal B** (731).

(4) Remove the **Fuser Lamp** (732).

Caution:
When reinstalling the Fuser Lamp, make sure that the Fuser Lamp is inserted into the Fuser Unit as illustrated. Do not touch the glass portion of the Fuser Lamp with bare hands. Grease from fingerprints will shorten its life cycle, use isopropyl alcohol to clean fingerprints.
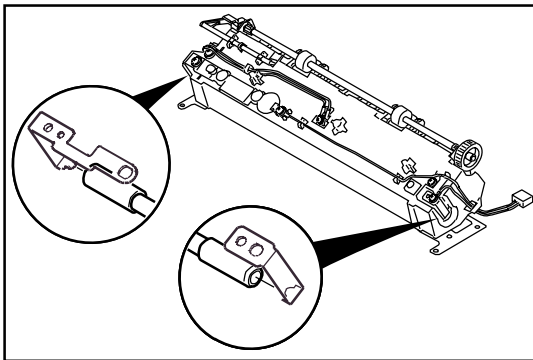
Caution:
When reinstalling the Fuser Lamp, make sure that both ends of the Fuser Lamp fits into the projected area of the **Fuser Lamp Terminal A** (724) and the **Fuser Lamp Terminal B** (731).
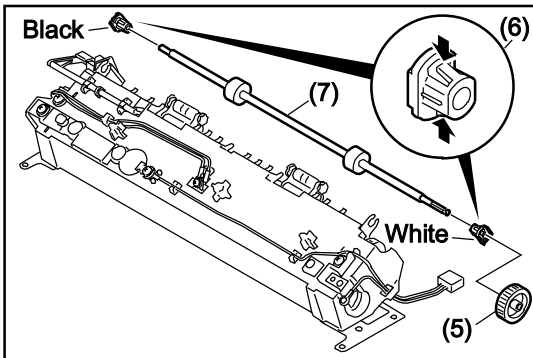
(5) Remove the **E22 Gear** (722).
   Caution:
   You may need to use force to pull out the Gear.

(6) Remove the **Right** and **Left P3.5L11.2 Bushings** (720 and 721).

(7) Remove the **Exit Roller** (719).
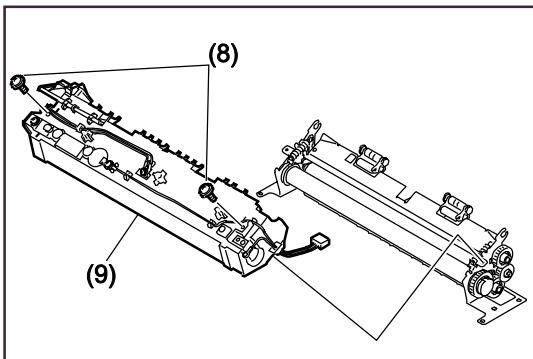
(8) 2 **Screws** (4N).

(9) Remove the **Fuser Cover** (723).
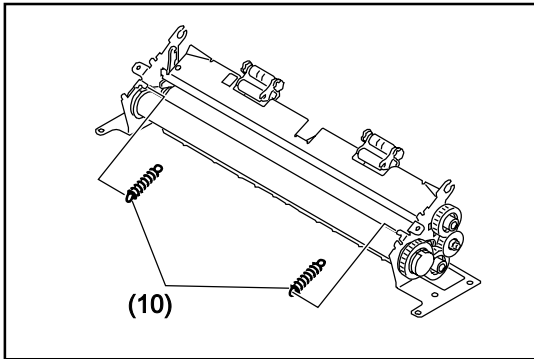
(10) Remove 2 **Pressure Springs** (708).
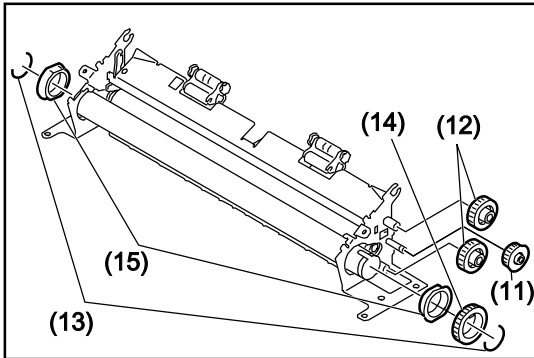
(11) Remove the **E14 Gear** (714).
Caution:
You may need to use force to pull out the Gear.
(12) Remove the 2 **E18 Gears** (713).
(13) Remove 2 **C-Rings** (712).
(14) Remove the **E24 Drive Gear** (711).
(15) Remove 2 **P17L6.8 Bushings** (710).
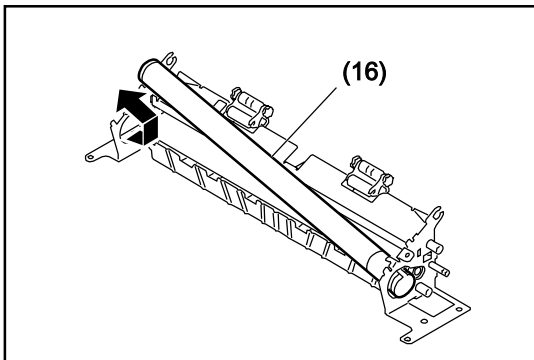
(16) Remove the **Fuser Roller** (709).
Caution:
Do not scratch the surface of the Fuser Roller when removing or reinstalling it.
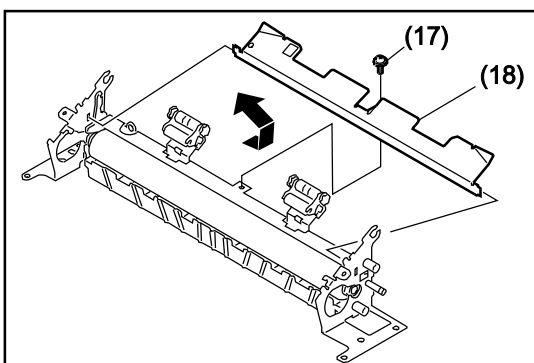
(17) 1 **Screw** (4N).
(18) Remove the **Lower Paper Exit Guide** (703).
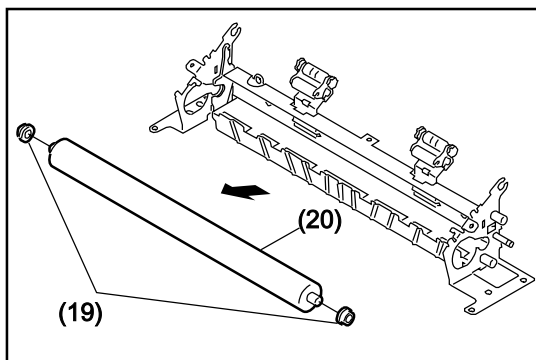
(19) Remove 2 **P6L5.5 Bushings** (707).

(20) Remove the **Pressure Roller** (706).

Caution:
Do not scratch the surface of the Pressure Roller when removing or reinstalling it.

2.2.16. Rear Chassis (505), SNS1 PC Board (1008)
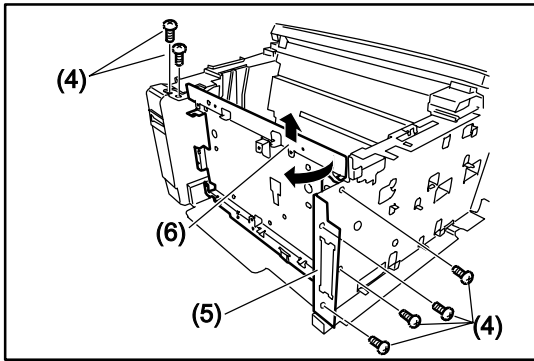
(1) Remove the **Power Supply Unit** (Refer to 2.2.12.).

(2) Remove the **SC PC Board** (Refer to 2.2.12.).

(3) Remove the **Fuser Unit** (Refer to 2.2.14.).

(4) 6 **Screws** (19).

(5) Remove the **Bracket** (403).

(6) Remove the **Rear Chassis** (505).
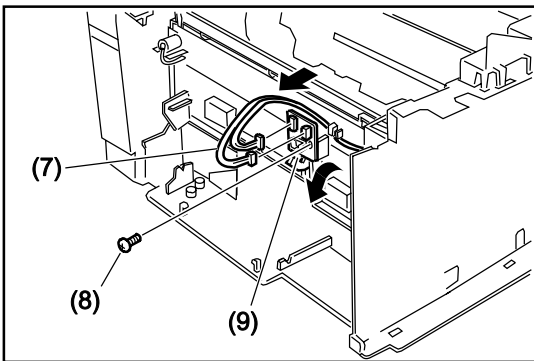
(7) Disconnect **Connectors CN80** and **CN81** on the **SNS1 PC Board** (1008).

(8) 1 **Screw** (19).

(9) Remove the **SNS1 PC Board** (1008).

2.2.17. Transfer Guide (601) Assembly, Feed Roller (526)
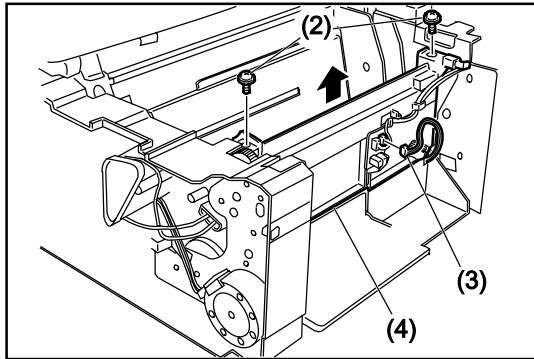
(1) Remove the **Rear Chassis** (Refer to 2.2.16.).
(2) 2 **Screws** (C8).
(3) Disconnect **Connector CN80** on the **SNS1 PC Board** (1008).
(4) Remove the **Transfer Guide** (601) **Assembly**.
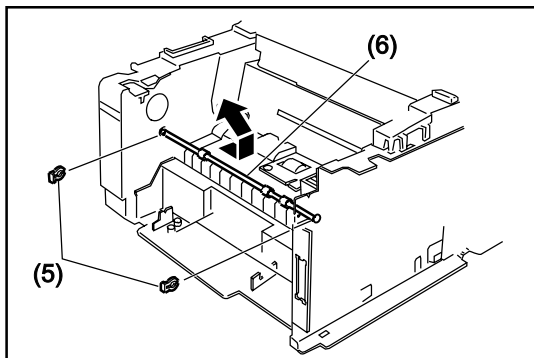
(5) Remove the 2 **Snap Rings**. (B9).
(6) Remove the **Feed Roller** (526).
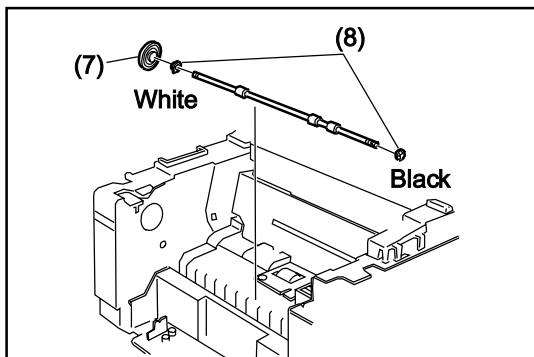
(7) Remove the **Roller Gear** (529).
(8) Remove 2 **P6L5 Bushings** (527, 528).

2.2.18. Toner Sensor (513), Laser Unit [LSU] (512), SNS3 PC Board (1009)
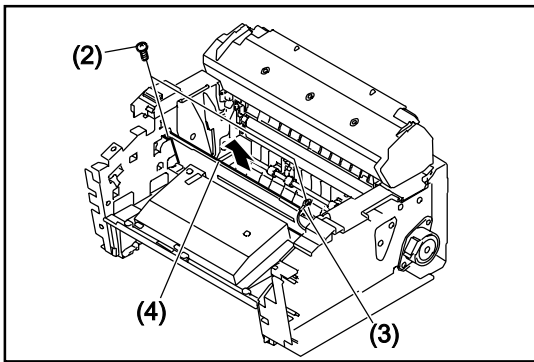
(1) Remove the **Transmit Guide Assembly** (Refer to 2.2.4.).
(2) 2 **Screws** (19).
(3) Remove **Ground Wire** (542).
(4) Remove the **CCD Shield Plate** (533).
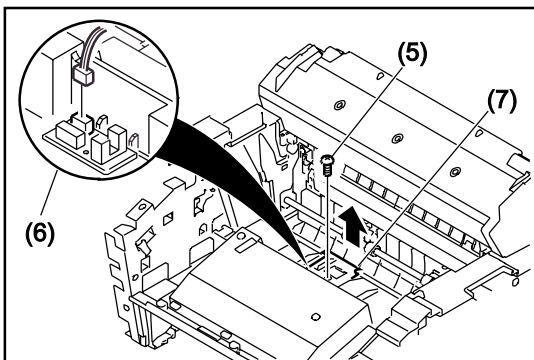
(5) 1 **Screw** (19).
(6) Disconnect **Connector CN84** on the **SNS3 PC Board** (1009).
(7) Remove the **Toner Sensor Spring Plate** (506) **Assembly**.
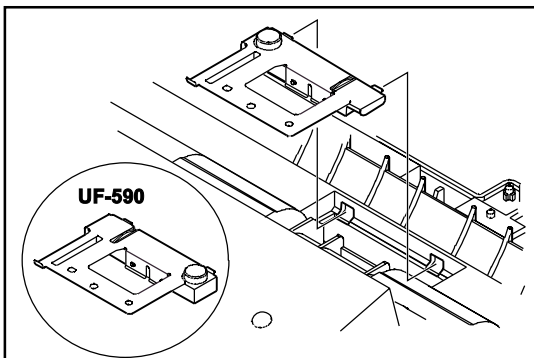
Note:
When reinstalling, make sure that the Toner Sensor Spring Plate is inserted into the 2 notches in the main frame as shown in the illustration.
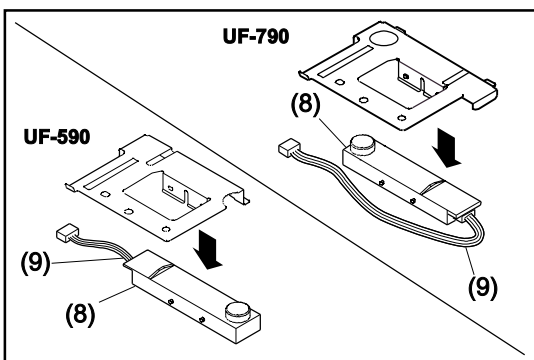
(8) Remove the **Toner Sensor** (513).
(9) Disconnect the **Connector** on the Toner Sensor.
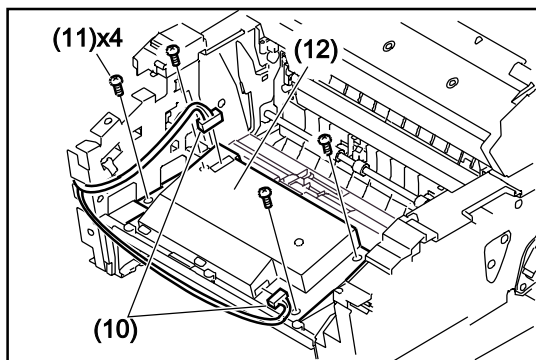
(10) Disconnect 2 **Connectors** on the **Laser Unit** (512).

(11) 4 **Screws** (1Y).

(12) Remove the **Laser Unit** (512).
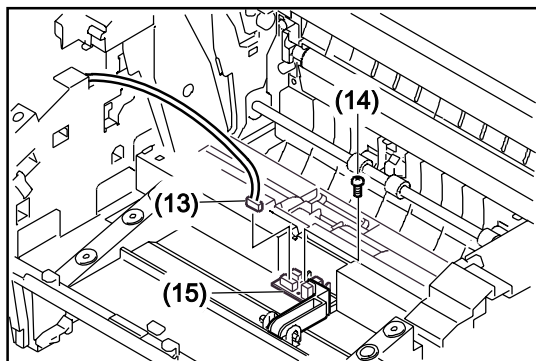
(13) Disconnect **Connectors CN83** and **CN84** on the **SNS3 PC Board** (1009).

(14) 1 **Screw** (19).

(15) Lift up the **No Paper Actuator** (525) and Remove the **SNS3 PC Board** (1009).

2.2.19. Bias Transfer Roller (604)
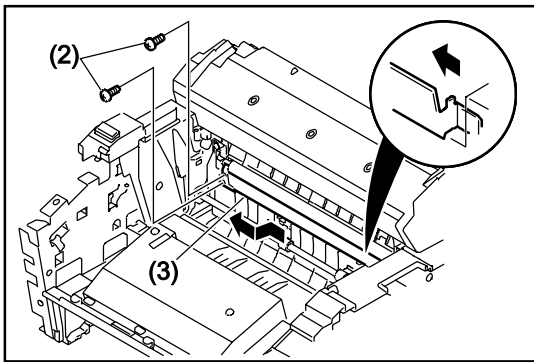
(1) Remove the **CCD Shield Plate**
    (Refer to 2.2.18.).
(2) 2 **Screws** (19).
(3) Remove the **BTR Guide** (602).
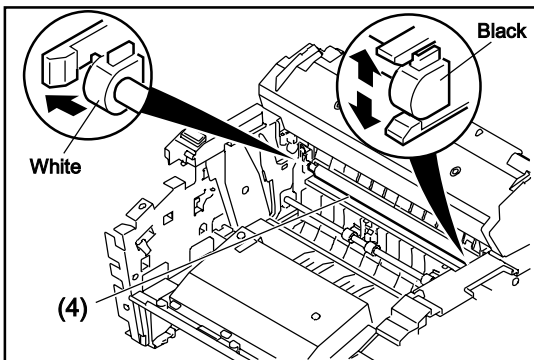
(4) Release the Latch Hook on the **Transfer Guide**
    (601) **Assembly** as illustrated and remove the
    Bias Transfer Roller (604).
    Caution:
    • Do not touch the surface of the Bias Transfer
      Roller. Clean the Bias Transfer Roller only with a
      dry cloth.
    • When cleaning or replacing the Bias Transfer
      Roller, clean both sides of the Transfer Guide
      with isopropyl alcohol.

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2.2.20. SNS2 PC Board (1010)
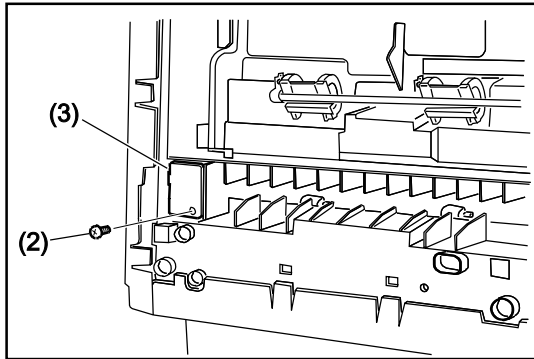
(1) Place the machine on its rear side.
(2) 1 **Screw** (19).
(3) Remove the **Plate A** (507).
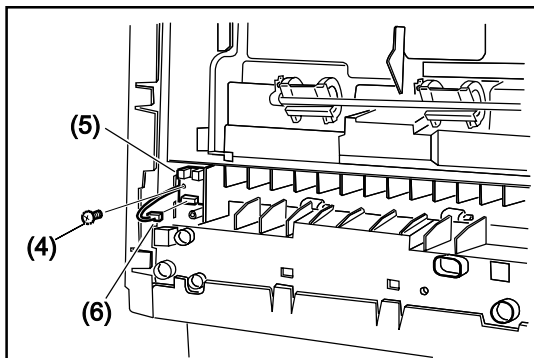
(4) 1 **Screw** (19).
(5) Disconnect **Connector CN82** (538) on the **SNS2 PC Board** (1010).
(6) Remove the **SNS2 PC Board** (1010).
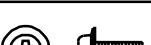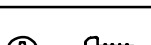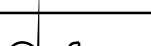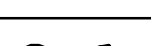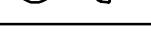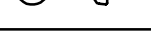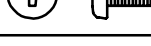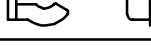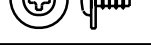
2.2.21. Printer Grease Points
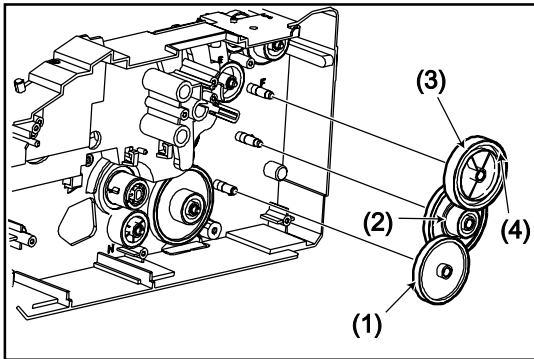
Before reassembling, apply EM-50L Grease to the parts shown in the illustration.
(1) **B83D22 Gear G** (622) : Gear surface
(2) **D60D20 Gear B** (621) : Rib surface
(3) **D55 Gear F** (619) : Gear surface
(4) **D55 Gear F** (619) : Gear Side surface

2.3. Screw Identification Template

Ref No.	Part No.	Figure	Remark
19	XTB3+8J		Screw
23	XYN3+F8		Screw
24	XYN4+F8		Screw
1Q	XYN3+F10		Screw
1Y	XTB3+10J		Screw
4N	XSN3+W8FC		Screw
7B	XTB26+6J		Screw
A9	DZPA000001		Screw
B1	DZPB000007		Silver Screw
B4	XTB3+8JK		Screw
B5	XSB4+10BN		Screw
B9	DZJM000171		Snap Ring
C2	DZPB000020		Screw
C8	XTW3+8SFC		Screw

3 Maintenance, Adjustments and Check Points

3.1. Required Tools

No.	Tool	No.	Tool
1	Soft Cloth	6	Tweezer
2	Isopropyl Alcohol	7	Pliers
3	Phillips Screwdriver (#2)	8	Cotton Swab
4	Stubby Phillips Screwdriver (#2)	9	Brush
5	Blade-tip Screwdriver (3/32 in)	10	Molykote EM-50L Grease (Available from Dow Corning, URL: http://www.dowcorning.com)

3.2. Periodic Check Points
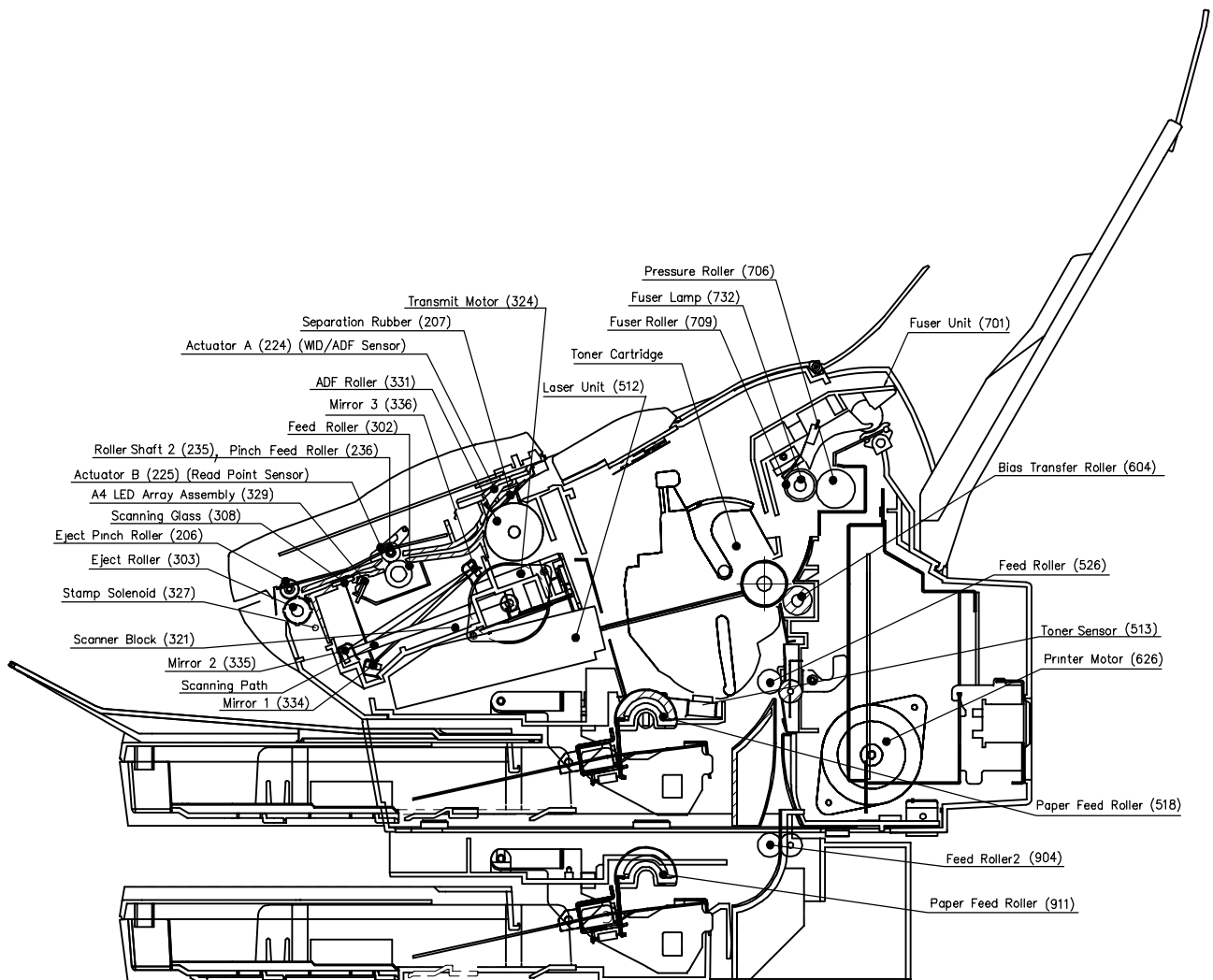
3.3. Periodic Maintenance Check List

The chart outlined below is a general guideline for maintenance. The example list is for an average usage of 50 transmitted and received documents per day. Needless to say, the environmental conditions and actual use will vary these factors. The chart below is for reference only.

	Mechanical Parts	Ref. No.	Cleaning		Replacement/Adjustment	
			Cycle	Procedure	Cycle	Procedure
Receiver Unit	Printer Motor	626	-	-	100,000 documents	Refer to ch2.2.12.
	Toner Cartridge		-	-	approx 7,500 pages (See Note)	-
	Paper Feed Roller	518 911	12 months or 10,000 documents	Refer to ch2.2.11.	30,000 documents	Refer to ch2.2.11.
	Feed Roller	526 904	12 months or 10,000 documents	Refer to ch2.2.17.	-	Refer to ch2.2.17.
	Bias Transfer Roller	604	12 months or 10,000 documents	Refer to ch2.2.19.	30,000 documents	Refer to ch2.2.19.
	Fuser Unit	701	When replacing Print Cartridge	Cleaning chart	50,000 documents	Refer to ch2.2.14.
	Fuser Roller	709	When the Recording Paper wraps itself around the roller.	Refer to ch2.2.15.	(Included as part of the Fuser Unit)	Refer to ch2.2.15.
	Pressure Roller	706	When the Recording Paper wraps itself around the roller.	Refer to ch2.2.15.	(Included as part of the Fuser Unit)	Refer to ch2.2.15.
Transmitter Unit	Roller Shaft 2	235	30,000 documents	Refer to ch2.2.3.	-	-
	Feed Pinch Roller * Shaft Hole	236	30,000 documents	Refer to ch2.2.3.	-	-
	ADF Roller	331	12 months or 10,000 documents	Refer to ch2.2.4.	30,000 documents	Refer to ch2.2.8.
	Separation Rubber	207	12 months or 10,000 documents	Refer to ch2.2.2.	30,000 documents	Refer to ch2.2.2.
	Feed Roller	302	12 months or 10,000 documents	Refer to ch2.2.4.	30,000 documents	Refer to ch2.2.9.
	Eject Roller	303	12 months or 10,000 documents	Refer to ch2.2.4.	30,000 documents	Refer to ch2.2.6.
	Scanning Glass	308	12 months or 10,000 documents	Refer to ch2.2.4.	-	-
	Mirrors	334 335 336	12 months or 10,000 documents	Refer to ch2.2.8.	-	-
	Transmit Motor	324	-	-	100,000 documents	Refer to ch2.2.7.
	"x" Stamp Head	325	-	-	5,000 documents	Refer to ch2.2.5.

Note

The number of pages is based on the ITU-T Image No. 1 test chart at Multi-Copy mode.

Operation environment 68°F (20°C), 50% RH, using A4 paper.

3.4. Updating the Firmware

Unlike other machines with removable EPROM (Erasable Programmable ROM), this machine is equipped with a F-ROM (Flash ROM) and an IEEE1284 Parallel Port as standard. The F-ROM offers the flexibility of quick and easy firmware updates. The firmware of the machine can be updated with the removable F-ROM Card or with a PC via the Parallel Port of the unit. (Refer to Section 5.1.9)

The following is the basic procedure to update the firmware of the machine. The details are described in the Firmware Update Tool Operating Instructions.

3.4.1. Creating a Master Firmware Card

A.Utilizing the Firmware Update Tool

1. Install the Firmware Update Tool.
2. Install a Flash Memory Card (2MB or higher) into the machine.
3. Follow the instructions included in the Firmware Update Tool Operating Instructions.

B.Copy the Firmware from an Existing Machine

1. Unplug the Power Cord to turn the machine OFF.
2. Install a Flash Memory Card (2 MB or higher) into the machine with the Panasonic Logo facing outwards.
3. Plug in the Power Cord to turn the machine ON.
4. Perform the Service Mode 9-2 (Firmware Backup).
5. The firmware is copied into the Flash Memory Card.
6. After the backup is completed, press "STOP" to return to standby.
7. Unplug the Power Cord to turn the machine OFF.
8. Remove the Master Firmware Card that you just created from the machine.
9. Plug in the Power Cord to turn the machine ON.
10. Use this Master Firmware Card to update the firmware on other machines.

Note:
1. If a Master Firmware Card is created containing UF-790 Firmware Code (V1.04 Only), **ONLY** a UF-790 machine can be used to delete the Firmware Code on the Flash Card.
2. If a Master Firmware Card containing UF-790 Firmware (V1.04 Only) is installed in a previous model (i.e. DP-130P/135P/135FP/150P/150FX/2000/2500/3000, DX-2000, UF-585/595/885/890/895) when the power to the machine is turned on, the machine will not boot-up at all.

3.4.2 Updating the Firmware using the Master Firmware Card

1. Before starting, print the Fax and Function Parameter Lists.
2. Unplug the Power Cord to turn the machine OFF.
3. Install the appropriate Master Firmware Card into the machine with the Panasonic Logo facing outwards.
4. Plug in the Power Cord to turn the machine ON.
5. Perform the Service Mode 9-1-1 (Firmware Update).
6. The firmware is copied into the machine.
7. After the update is completed, the machine reboots itself and returns to standby.
8. Perform the Service Mode 6 (Parameter Initialization).
9. Unplug the Power Cord to turn the machine OFF.
10. Remove the Master Firmware Card from the machine.
11. Plug in the Power Cord to turn the machine ON.
12. Reprogram the Fax and/or Function Parameters according to the lists printed in Step 1 above if the settings are other than factory default.

Note:
For a UF-790 with Firmware V1.04 and updating the Firmware to V2.xx, please see Section 3.4.6. for Instructions.

3.4.3   Updating the Firmware using a PC via the Parallel Port

1. Before starting, print the Fax and Function Parameter Lists.
2. Connect the machine to the PC with a Parallel Printer Cable.
3. Install the Panasonic Firmware Programming Wizard software to the PC. (Refer to the Firmware Update Tool Operating Instructions)
4. Perform the Service Mode 9-1-2 (Firmware Update).
   Now the machine is ready to accept programming firmware code from the PC.
5. Start the Panasonic Firmware Program using the Wizard.
6. The firmware is copied into the machine.
7. After the update is completed, the machine reboots itself and returns to standby.
Note:
   For a UF-790 with Firmware V1.04 and updating the Firmware to V2.xx,
   please see Section 3.4.6. for Instructions.

3.4.4.   Erasing the Master Firmware Card

1. Unplug the Power Cord to turn the machine OFF.
2. Install the Master Firmware Card into the machine with the Panasonic Logo facing outwards.
3. Plug in the Power Cord to turn the machine ON.
4. Perform the Service Mode 9-5 (PC $\rightarrow$ Flash Card).
5. The firmware is erased from the card and the following message is shown on the display:

```
READY TO PROGRAM
PRESS SET TO START
```

6. Press "STOP" twice to return to standby.
7. Unplug the Power Cord to turn the machine OFF.
8. Remove the blank Flash Memory Card from the machine.
9. Plug in the Power Cord to turn the machine ON.

3.4.5.   Firmware Version
<UF-790>

HOST   : UF-790 A A V1.xxxx AU

Destination Code (Fax)
AU : USA / Canada

Firmware Version (V1.xxxx)

Language Code
A : US English, C-French & Spanish
B : US English, Spanish & Portuguese
b : English, French & Spanish
g : German, French & Italian

Firmware Type
A : Standard
B : Optional

Model Number

<UF-590>

HOST : UF-590 A A V1.xxxx AB

———————— Destination Code (Fax)
　　　　　　　　AB : UK

———————— Firmware Version (V1.xxxx)

———————— Language Code
　　　　　　　　A : US English, C-French & Spanish
　　　　　　　　B : US English, Spanish & Portuguese
　　　　　　　　b : English, French & Spanish
　　　　　　　　g : German, French & Italian

———————— Firmware Type
　　　　　　　　A : Standard
　　　　　　　　B : Optional

———————— Model Number
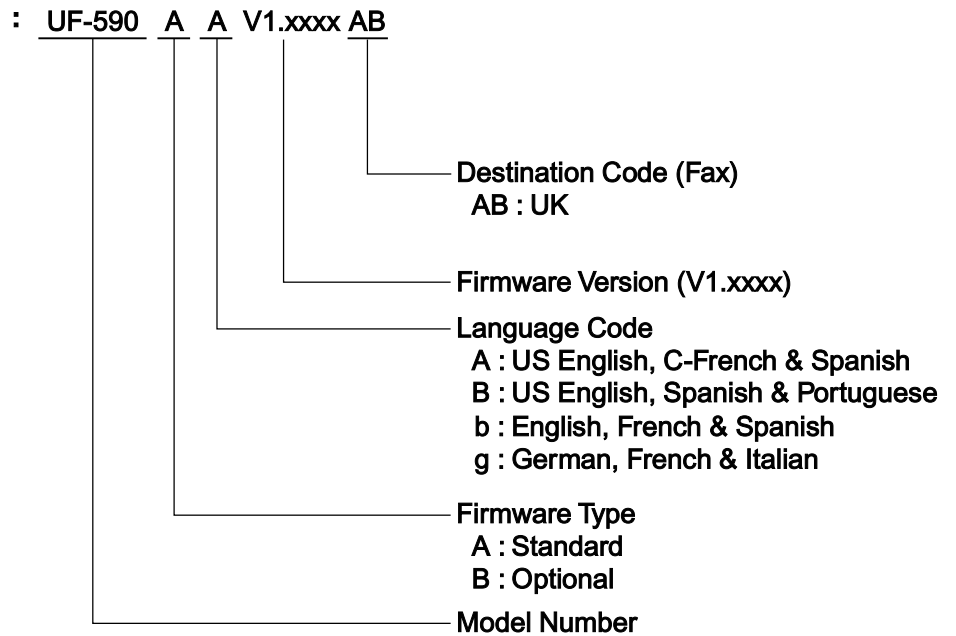
3.4.6.　Updating the UF-790 Firmware from V1.04 to V2.xx Only

PC → Host
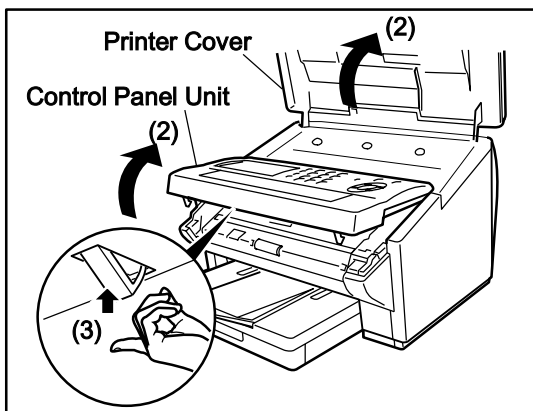
(1) Unplug the Power Cord.
(2) Open the Control Panel Unit and the Printer Cover.
(3) Activate the Read-Point Sensor with your finger as shown and plug in the Power Cord.
(4) Wait about 10 seconds, then release the Read-Point Sensor and close the Control Panel Unit.
(5) Start the Firmware Programming Wizard and proceed with downloading the firmware code to the unit.
(6) Once the firmware code is reprogrammed in the unit, it will reboot automatically and return to standby.
(7) Perform Parameter Initialization.

■ Card → Host

(1) Unplug the Power Cord.
(2) Open the Printer Cover.
(3) Remove the Memory Card Cover.

Memory Card (4)

(4) Insert the Flash Memory Card gently into the card slot with the Panasonic logo facing to the outside of the machine.

Caution:
Installing the Flash Memory Card in the wrong direction may damage the connecting pins inside the machine.

Control Panel Unit (5)

(6)

(5) Open the Control Panel Unit.
(6) Activate the Read Point Sensor with your finger and plug in the Power Cord.
(7) Wait approximately 10 seconds, release the Read Point Sensor, close the Control Panel Unit (ADF) and the Printer Cover.
(8) Allow the unit to complete the Firmware Update (approx. 1-minute). When completed, the unit will reboot and progress to the Standby Mode.
(9) Unplug the Power Cord.
(10) Remove the Flash Memory Card.
(11) Re-install the Memory Card Cover.
(12) Plug in the Power Cord.
(13) Perform Parameter Initialization.

3.5. Glossary of Electrical Abbreviations

Glossary of Electrical Abbreviations	
Signal Name	**Description**
+24V	+24 VDC Power Supply
+24VD	+24 VDC Power Supply
+24VM	+24 VDC Power Supply (Motors)
+3.3V	+3.3 VDC Power Supply
+5V	+5 VDC Power Supply
+5VP	+5 VDC Pilot Power Supply (Sleep Mode)
-5V	-5 VDC Power Supply
A1	Address Signal
A2	Address Signal
A3	Address Signal
A4	Address Signal
A5	Address Signal
A6	Address Signal
A7	Address Signal
A8	Address Signal
A9	Address Signal
A10	Address Signal
A11	Address Signal
A12	Address Signal
A13	Address Signal
A14	Address Signal
A15	Address Signal
A16	Address Signal
A17	Address Signal
A18	Address Signal
A19	Address Signal
A20	Address Signal
A21	Address Signal
A22	Address Signal
AGND	Ground
Black (L)	AC Power Supply
BUSY	Peripheral Busy (Peripheral→Host)
Charge	Charge Current: 200 μA (AC 300 Hz Sine Wave) & DC Charge Voltage
D0	Data Signal
D1	Data Signal
D2	Data Signal
D3	Data Signal
D4	Data Signal
D5	Data Signal
D6	Data Signal
D7	Data Signal
D8	Data Signal
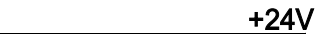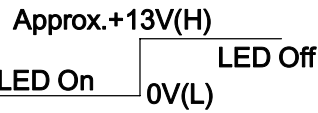
Glossary of Electrical Abbreviations	
Signal Name	**Description**
D9	Data Signal
D10	Data Signal
D11	Data Signal
D12	Data Signal
D13	Data Signal
D14	Data Signal
D15	Data Signal
DATA0	Data Signal
DATA1	Data Signal
DATA2	Data Signal
DATA3	Data Signal
DATA4	Data Signal
DATA5	Data Signal
DATA6	Data Signal
DATA7	Data Signal
DB0	Data Signal
DB1	Data Signal
DB2	Data Signal
DB3	Data Signal
DB4	Data Signal
DB5	Data Signal
DB6	Data Signal
DB7	Data Signal
Development	Development Voltage (AC 1.65 kHz Square Wave) & DC Voltage
DOS	Output Signal
E	Data Read/Write Enable Signal
FCK1	Shift Register Clock
FCK2	Shift Register Clock
FG	Ground
FR	Reset Signal
FSG	Data Transfer Enable Signal
GLED	GND for LED
GND	Ground
HLIN1	Line Signal for the Fax Handset
HLIN2	Line Signal for the Fax Handset
ID0	Flash Memory Card ID
ID1	Flash Memory Card ID
ID2	Flash Memory Card ID
L+5V	Laser Circuit +5 VDC Power Supply
L1 (R)	Line Signal
L2 (T)	Line Signal
LDRE	Timing Sensor and No Cassette Sensor LED Drive Current
LDSC1	No Cassette Sensor LED Drive Current
LDSP1	No Paper Sensor LED Drive Current

Glossary of Electrical Abbreviations	
Signal Name	**Description**
MGND	Ground
MIC (-)	Handset Microphone
MIC (+)	Handset Microphone
MMnA	Motor Drive Signal
MMnB	Motor Drive Signal
MMpA	Motor Drive Signal
MMpB	Motor Drive Signal
MTnA	Stepping Signal
MTnB	Stepping Signal
MTpA	Stepping Signal
MTpB	Stepping Signal
nACK	Peripheral Clock / Data Transfer Acknowledge (Peripheral→Host)
nADF1	Paper Feed Roller Solenoid Control Signal
nADF2	Paper Feed Roller Solenoid Control Signal
nAUTOFD	Host Busy (Host→Peripheral)
nBPNT	Read Point Detection Signal
nCCHK1	No Cassette Detection Signal
nCCHK2	No Cassette Detection Signal (2nd Cassette)
nCD	Flash Memory Card Detection Signal
nCE1	+5 VDC Power Supply
nCE2	Low Enable
nCR1	Charge Control DC Output
nCRCK	Charge Control DC Output
nDRCK	Development +AC Clock
nESEN	Paper Exit Signal
nFAULT	Data Available / Error Condition (Peripheral→Host)
nFAULT	Fan Ready Signal
nHSYNC	Horizontal Synchronous Signal
nINIT	Reserve Request / Initialize (Host→Peripheral)
nLDON	Laser Control
nLEDON	LED Enable Signal
nMB4	Flash Memory Size
nMPOFF	Energy Saver Mode Control Signal
nOE	Read Signal - Low Enable
nOP	2nd Feeder Unit Detection Signal
nPCHK1	No Paper Sensor Detection Signal
nPCHK2	No Paper Detection Signal (2nd Cassette)
nPMCK	Tetragon Motor Clock
nPMON	Tetragon Motor Control Signal
nPMRY	Tetragon Motor Ready Signal
nPWSAVE	Energy Saver Mode Transport Signal
nRSEN	Timing Sensor Detection Signal
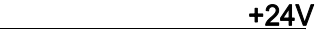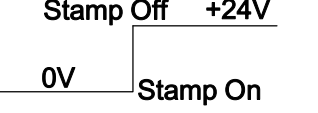
Glossary of Electrical Abbreviations	
Signal Name	**Description**
nSELIN	IEEE1284 Active (Host→Peripheral)
nSSR	Fuser Lamp Control Signal
nSTAMPON	Stamp Control Signal
nSTB	Host Clock / Data Transfer Strobe (Host→Peripheral)
nS/H	Sample Hold Signal
nTR0	Transfer Control Cleaning Output
nVIDEO	Laser Control
nWEH	Write H Signal - Low Enable
nWEL	Write L Signal - Low Enable
OS	Output Signal
pADF2	Feed Roller Drive Clutch Control Signal (2nd Cassette)
pBZCLK	Buzzer Signal
pPNLRD	Reception Signal
pPNLRST	Panel Reset Signal
pPNLSD	Transmission Signal
pCMLD	Line Switching Relay Drive Signal
pCTON	Ring Detection Signal
PE	Acknowledge Data Request / Paper Empty Condition (Peripheral→Host)
pHKOF	External Phone Off-Hook Detection Signal
PLH	+5V Pull Up
pSPKOT	Line Signal, Key Tone, Ringer
R/W	Data Read/Write Select Signal
RCV (-)	Handset Receiver
RCV (+)	Handset Receiver
RDY / nBSY	Not Used
RS	Register Select Signal
RSV	Not Used
SELECT	Select Signal (Peripheral→Host)
SNCMN	+2 VDC Power Supply
TGND	Ground
TH1	Thermistor Output Signal
TH2	Thermistor Output Signal
TONER	Remaining Toner Level Signal
Transfer	Transfer Current: (+3 μA) & Cleaning Voltage: (-1500 V)
V5	+5 VDC Power Supply
nWAKUP	Energy Saver Mode Enable
White (N)	AC Power Supply

3.6. SC PC Board
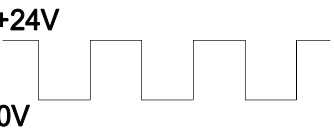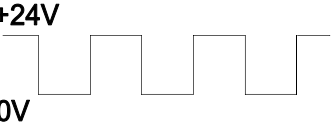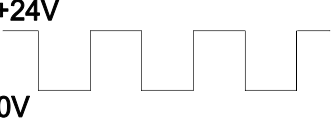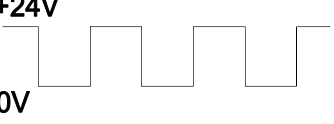
CN1

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN1-1	+24V	LED Array	+24V	+24 VDC Power Supply
CN1-2	nLEDON	LED Array	Approx.+13V(H) LED On — LED Off — 0V(L)	LED Enable Signal
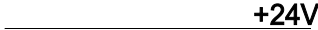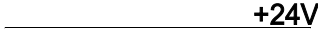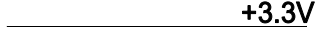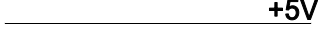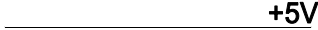
CN3

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN3-1	+24V	Stamp Solenoid	+24V	+24 VDC Power Supply
CN3-2	N.C.			Not Used
CN3-3	nSTAMPON	Stamp Solenoid	Stamp Off +24V 0V — Stamp On	Stamp Control Signal
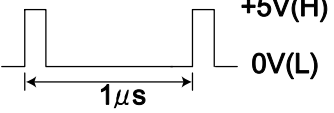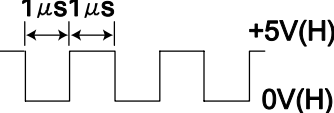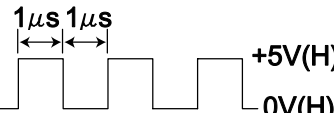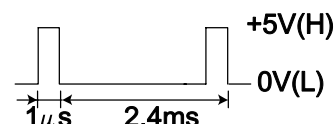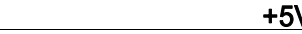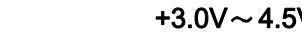
CN5

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN5-1	MTnB	Transmit Motor	+24V 0V	Stepping Signal
CN5-2	MTpB	Transmit Motor	+24V 0V	Stepping Signal
CN5-3	MTnA	Transmit Motor	+24V 0V	Stepping Signal
CN5-4	MTpA	Transmit Motor	+24V 0V	Stepping Signal
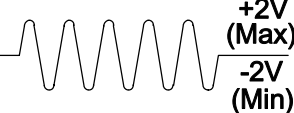
CN6

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN6-1	+24V	POWER SUPPLY UNIT CN103-1	+24V	+24 VDC Power Supply
CN6-2	+24V	POWER SUPPLY UNIT CN103-2	+24V	+24 VDC Power Supply
CN6-3	GND	POWER SUPPLY UNIT CN103-3	0V	Ground
CN6-4	GND	POWER SUPPLY UNIT CN103-4	0V	Ground
CN6-5	GND	POWER SUPPLY UNIT CN103-5	0V	Ground
CN6-6	+3.3V	POWER SUPPLY UNIT CN103-6	+3.3V	+3.3 VDC Power Supply
CN6-7	+5V	POWER SUPPLY UNIT CN103-7	+5V	+5 VDC Power Supply
CN6-8	-5V	POWER SUPPLY UNIT CN103-8	-5V	-5 VDC Power Supply
CN6-9	+5VP	POWER SUPPLY UNIT CN103-9	+5V	+5 VDC Pilot Power Supply, that provides power to the active components during the Sleep Mode.
CN6-10	nMPOFF	POWER SUPPLY UNIT CN103-10	+6~7V 0V (Energy Saver Mode)	Energy Saver Mode Control Signal
CN6-11	nSSR	POWER SUPPLY UNIT CN103-11	Fuser Lamp ON	Fuser Lamp Control Signal
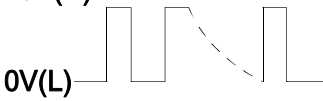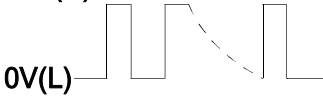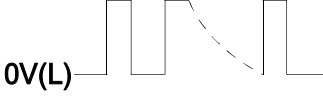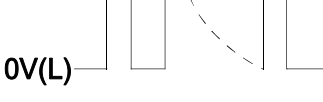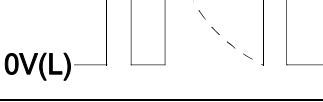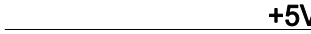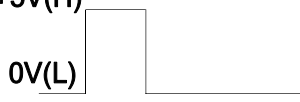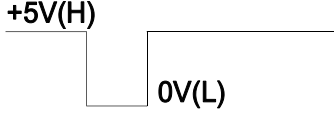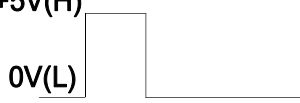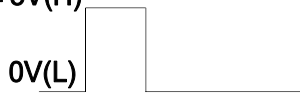
CN7

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN7-1	FR	CCD PCB CN30-1	+5V(H) 0V(L) 1μs	Reset Signal
CN7-2	FCK1	CCD PCB CN30-2	1μs 1μs +5V(H) 0V(H)	Shift Register Clock
CN7-3	FCK2	CCD PCB CN30-3	1μs 1μs +5V(H) 0V(H)	Shift Register Clock
CN7-4	FSG	CCD PCB CN30-4	+5V(H) 0V(L) 1μs 2.4ms	Data Transfer Enable Signal
CN7-5	AGND	CCD PCB CN30-5	0V	Ground
CN7-6	+5V	CCD PCB CN30-6	+5V	+5 VDC Power Supply
CN7-7	DOS	CCD PCB CN30-7	+3.0V∼4.5V	Output Signal
CN7-8	OS	CCD PCB CN30-8	2.4ms 3.5V∼ 4.5V Max.1.0V	Output Signal
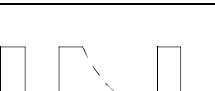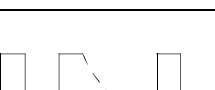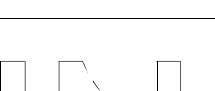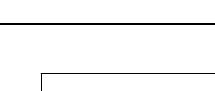
CN9
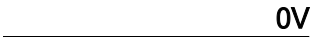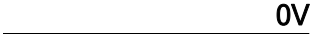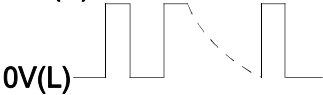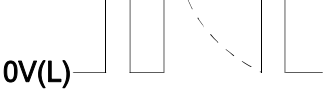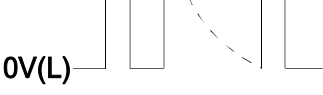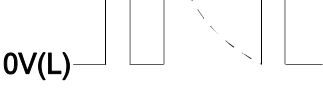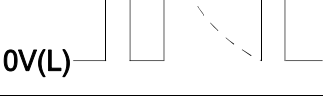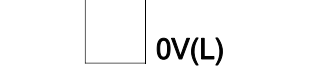
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN9-1	pSPKOT	SPEAKER	+2V (Max) -2V (Min)	Line Signal, Key Tone, Ringer
CN9-2	GND	SPEAKER	0V	Ground
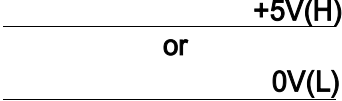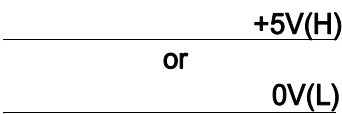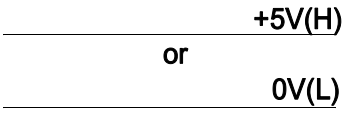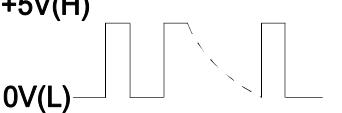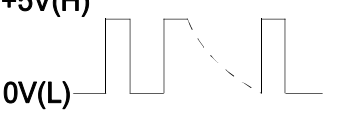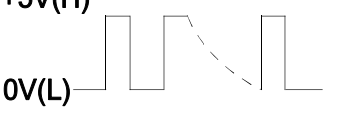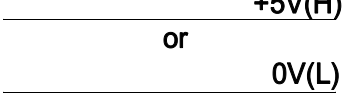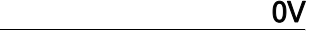
CN12

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN12-1	GND	Flash Memory Card	0V	Ground
CN12-2	D3	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-3	D4	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-4	D5	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-5	D6	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-6	D7	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-7	nCE1	Flash Memory Card	+5V	+5 VDC Power Supply
CN12-8	A11	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-9	nOE	Flash Memory Card	+5V(H) 0V(L)	Read Signal - Low Enable
CN12-10	A12	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-11	A10	Flash Memory Card	+5V(H) 0V(L)	Address Signal

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN12-12	A9	Flash Memory Card	+5V(H) / 0V(L)	Address Signal
CN12-13	A14	Flash Memory Card	+5V(H) / 0V(L)	Address Signal
CN12-14	A15	Flash Memory Card	+5V(H) / 0V(L)	Address Signal
CN12-15	nWEL	Flash Memory Card	+5V(H) / 0V(L)	Write L Signal - Low Enable
CN12-16	RDY / nBSY	Flash Memory Card		Not Used
CN12-17	+5V	Flash Memory Card	+5V	+5 VDC Power Supply
CN12-18	N.C.	Flash Memory Card		Not Used
CN12-19	A17	Flash Memory Card	+5V(H) / 0V(L)	Address Signal
CN12-20	A16	Flash Memory Card	+5V(H) / 0V(L)	Address Signal
CN12-21	A13	Flash Memory Card	+5V(H) / 0V(L)	Address Signal
CN12-22	A8	Flash Memory Card	+5V(H) / 0V(L)	Address Signal
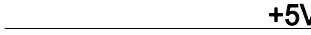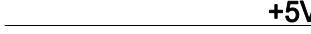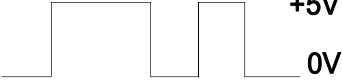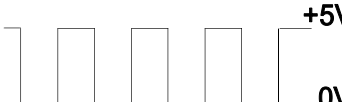
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN12-23	A7	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-24	A6	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-25	A5	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-26	A4	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-27	A3	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-28	A2	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-29	A1	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-30	D0	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-31	D1	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-32	D2	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-33	nWEH	Flash Memory Card	+5V(H) 0V(L)	Write H Signal - Low Enable

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN12-34	GND	Flash Memory Card	0V	Ground
CN12-35	GND	Flash Memory Card	0V	Ground
CN12-36	nCD	Flash Memory Card	5V(H) / 0V(L)	Flash Memory Card Detection Signal H: Card Not Installed L: Card Installed
CN12-37	D11	Flash Memory Card	+5V(H) / 0V(L)	Data Signal
CN12-38	D12	Flash Memory Card	+5V(H) / 0V(L)	Data Signal
CN12-39	D13	Flash Memory Card	+5V(H) / 0V(L)	Data Signal
CN12-40	D14	Flash Memory Card	+5V(H) / 0V(L)	Data Signal
CN12-41	D15	Flash Memory Card	+5V(H) / 0V(L)	Data Signal
CN12-42	nCE2	Flash Memory Card	+5V(H) / 0V(L)	Low Enable
CN12-43	N.C.			Not Used
CN12-44	RSV	Flash Memory Card		Not Used

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN12-45	RSV	Flash Memory Card		Not Used
CN12-46	A18	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-47	A19	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-48	A20	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-49	A21	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-50	A22	Flash Memory Card	+5V(H) 0V(L)	Address Signal
CN12-51	+5V	Flash Memory Card	+5V	+5 VDC Power Supply
CN12-52	N.C.	Flash Memory Card		Not Used
CN12-53	GND	Flash Memory Card	0V	Ground
CN12-54-56	N.C.	Flash Memory Card		Not Used
CN12-57	RSV	Flash Memory Card		Not Used
CN12-58	N.C.	Flash Memory Card		Not Used

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN12-59	nMB4	Flash Memory Card	+5V(H) or 0V(L)	Flash Memory Size H: 8MB L: Others
CN12-60	RSV	Flash Memory Card		Not Used
CN12-61	N.C.	Flash Memory Card		Not Used
CN12-62	ID2	Flash Memory Card	+5V(H) or 0V(L)	Flash Memory Card ID
CN12-63	ID1	Flash Memory Card	+5V(H) or 0V(L)	Flash Memory Card ID
CN12-64	D8	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-65	D9	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-66	D10	Flash Memory Card	+5V(H) 0V(L)	Data Signal
CN12-67	ID0	Flash Memory Card	+5V(H) or 0V(L)	Flash Memory Card ID
CN12-68	GND	Flash Memory Card	0V	Ground

CN14

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN14-1	GND	PNL PCB CN50-1	0V	Ground
CN14-2	+5V	PNL PCB CN50-2	+5V	+5 VDC Power Supply
CN14-3	+5VP	PNL PCB CN50-3	+5V	+5 VDC Pilot Power Supply, that provides power to the active components during the Sleep Mode.
CN14-4	GND	PNL PCB CN50-4	0V	Ground
CN14-5	pPNLSD	PNL PCB CN50-5	+5V 0V	Transmission Signal
CN14-6	pPNLRD	PNL PCB CN50-6	+5V 0V	Reception Signal
CN14-7	nPWSAVE	PNL PCB CN50-7	Energy Saver Mode +5V Standby 0V	Energy Saver Mode Transport Signal
CN14-8	nWAKUP	PNL PCB CN50-8	+5V 0V	Energy Saver Mode Enable H: Enable L: Disable
CN14-9	pPNLRST	PNL PCB CN50-9	+5V 0V	Panel Reset Signal H: Reset L: Not Reset
CN4-10	pBZCLK	PNL PCB CN50-10	+5V 0V	Buzzer Signal
CN4-11	nBPNT	PNL PCB CN50-11	+3.3V ON	Read Point Detection Signal L: Detect
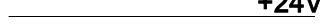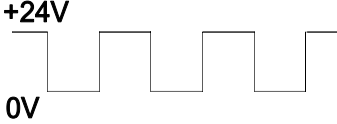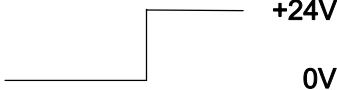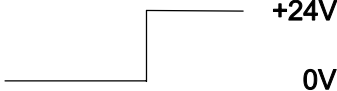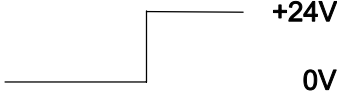
CN18

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN18-1	L2 (T)	MJR PCB CN28-1		Line Transformer Input Signal
CN18-3	L1 (R)	MJR PCB CN28-3	0V	Ground
CN18-6	+24V	MJR PCB CN29-1	+24V	+24 VDC Power Supply
CN18-7	+5VP	MJR PCB CN29-2	+5V	+5 VDC Power Supply
CN18-8	GND	MJR PCB CN29-3	0V	Ground
CN18-9	pCMLD	MJR PCB CN29-4	+5V(H) 0V(L)	Line Switching Relay Drive Signal H : CML On L : CML Off
CN18-10	pCTON	MJR PCB CN29-5	above +3V(H) Ring Detected 0V	Ring Detection Signal H : Ring Detected L : Ring Not Detected
CN18-11	pHKOF	MJR PCB CN29-6	+5V(H) 0V(L)	External Phone Off-Hook Detection Signal (Phone Line must be connected) H : Off Hook L : On Hook
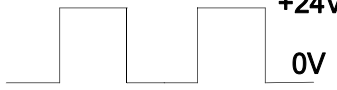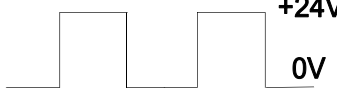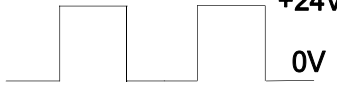
CN52
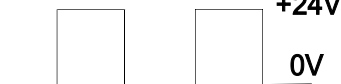
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN52-1	TH1	Thermistor Assembly	5V 0V	Thermistor Output Signal
CN52-2	TH2	Thermistor Assembly	5V 0V	Thermistor Output Signal

CN53

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN53-1	+24VM	POWER SUPPLY UNIT CN103-12	+24V	+24 VDC Power Supply
CN53-2	nDRCK	POWER SUPPLY UNIT CN103-13	+24V 0V	Development +AC Clock
CN53-3	nCRCK	POWER SUPPLY UNIT CN103-14	+24V 0V	Charge Control DC Output
CN53-4	nCR1	POWER SUPPLY UNIT CN103-15	+24V 0V	Charge Control DC Output
CN53-5	nTR0	POWER SUPPLY UNIT CN103-16	+24V 0V	Transfer Control Cleaning Output

CN54
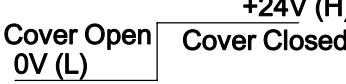
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN54-1	MMpA	Main Motor CN118-1	+24V 0V	Motor Drive Signal
CN54-2	+24VM	Main Motor CN118-2	+24V	+24 VDC Power Supply
CN54-3	MMnA	Main Motor CN118-3	+24V 0V	Motor Drive Signal
CN54-4	MMpB	Main Motor CN118-4	+24V 0V	Motor Drive Signal
CN54-5	+24VM	Main Motor CN118-5	+24V	+24 VDC Power Supply

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN54-6	MMnB	Main Motor CN118-6	+24V / 0V	Motor Drive Signal
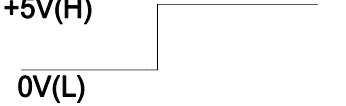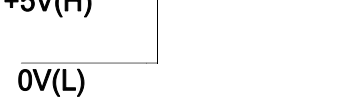
CN56
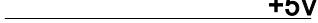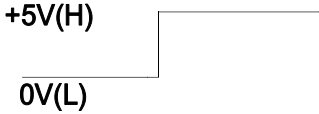
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN56-1	+24VM	Paper Feed Solenoid	+24V	+24 VDC Power Supply
CN56-2	nADF1	Paper Feed Solenoid	ON +24V (H) / 0V (L)	Paper Feed Roller Solenoid Control Signal

CN57
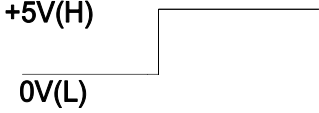
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN57-1	+24V	ILS PCB CN73-1	+24V	+24 VDC Power Supply
CN57-2	N.C.			
CN57-3	+24VD	ILS PCB CN73-3	+24V (H) Cover Open / Cover Closed 0V (L)	Printer Cover Detection Signal

CN58

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN58-1	nCCHK1	SNS4 PCB CN87-1	+5V(H) / 0V(L)	No Cassette Detection Signal L: No Cassette
CN58-2	GND	SNS4 PCB CN87-2	0V	Ground
CN58-3	nRSEN	SNS4 PCB CN87-3	+5V(H) / 0V(L)	Timing Sensor Detection Signal L: Detect
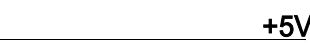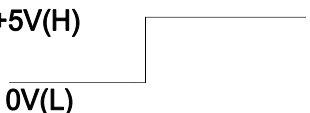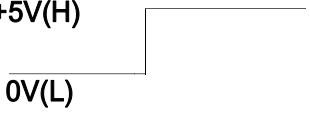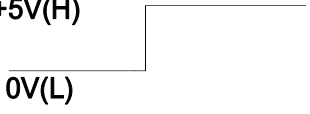
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN58-4	N.C.			
CN58-5	+5V	SNS4 PCB CN87-5	+5V	+5 VDC Power Supply
CN58-6	nESEN	SNS4 PCB CN87-6	+5V(H) 0V(L)	Paper Exit Sensor Detection Signal L: Detect

CN59
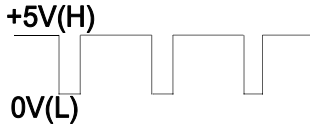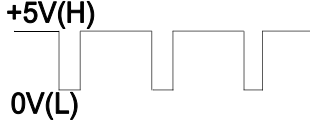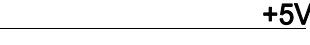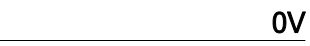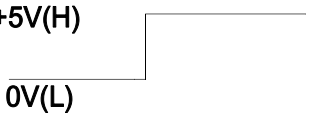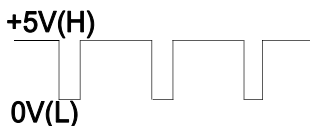
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN59-1	nPCHK1	SNS3 PCB CN83-1	+5V(H) 0V(L)	No Paper Sensor Detection Signal H: No Paper
CN59-2	LDSP1	SNS3 PCB CN83-2	Approx. +1 VDC	No Paper Sensor LED Drive Current
CN59-3	GND	SNS3 PCB CN83-3	0V	Ground
CN59-4	TONER	SNS3 PCB CN83-4	Approx. +2 VDC	Remaining Toner Level Signal
CN59-5	+5V	SNS3 PCB CN83-5	+5V	+5 VDC Power Supply
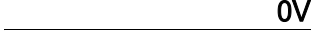
CN66

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN66-1	+24VM	CST2 PCB CN70-1	+24V	+24 VDC Power Supply
CN66-2	GND	CST2 PCB CN70-2	0V	Ground
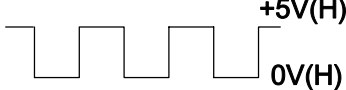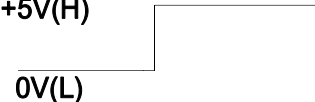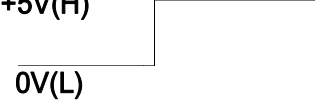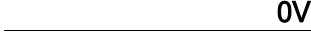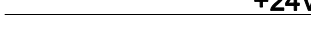
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN66-3	+5V	CST2 PCB CN70-3	+5V	+5 VDC Power Supply
CN66-4	nPCHK2	CST2 PCB CN70-4	+5V(H) 0V(L)	No Paper Detection Signal (2nd Cassette) H: No Paper L: Paper
CN66-5	pADF2	CST2 PCB CN70-5	+5V (H) ON 0V (L)	Feed Roller Drive Clutch Control Signal (2nd Cassette)
CN66-6	nCCHK2	CST2 PCB CN70-6	+5V(H) 0V(L)	No Cassette Detection Signal (2nd Cassette) L: No Cassette
CN66-7	nOP	CST2 PCB CN70-7	+5V(H) 0V(L)	2nd Feeder Unit Detection Signal H: No Feeder Unit

CN68
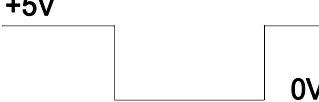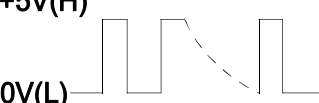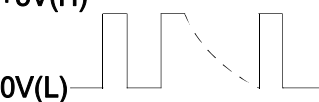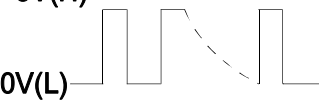
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN68-1	nS/H	LSU CN1-1	+5V(H) 0V(L)	Laser Power Sample/Hold Timing Signal L : Sampling H : Holding
CN68-2	nHSYNC	LSU CN1-2	+5V(H) 0V(L)	Horizontal Synchronous Signal 2.136 ms (400 dpi) 1.393 ms (600 dpi)
CN68-3	L+5V	LSU CN1-3	+5V	Laser Circuit +5 VDC Power Supply (Supplied only while the LP is operating)
CN68-4	GND	LSU CN1-4	0V	Ground
CN68-5	nLDON	LSU CN1-5	+5V(H) 0V(L)	Laser Control
CN68-6	nVIDEO	LSU CN1-6	+5V(H) 0V(L)	Video Data L: Black H: White
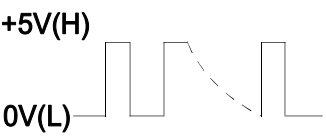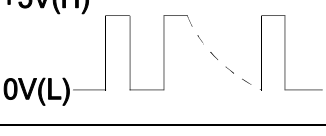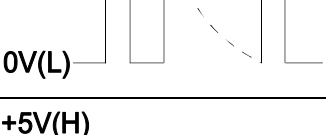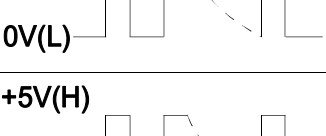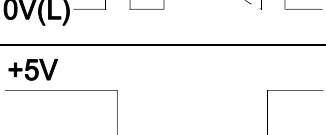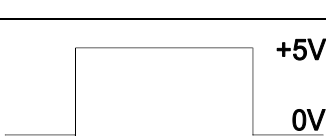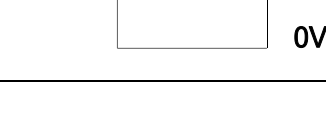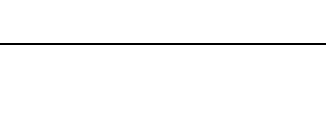
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN68-7	GND	LSU CN1-7	0V	Ground

CN69
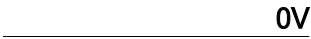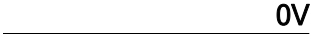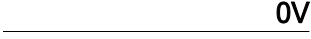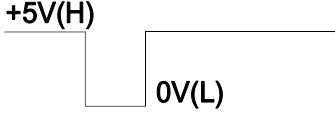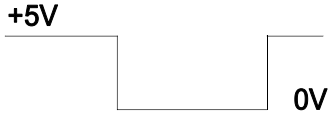
SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN69-1	nPMCK	LSU CN15-1	+5V(H) 0V(H)	Tetragon Motor Clock 0.702 kHz (400 dpi) 1.076 kHz (600 dpi)
CN69-2	nPMRY	LSU CN15-2	+5V(H) 0V(L)	Tetragon Motor Ready Signal H: Not Ready L: Ready
CN69-3	nPMON	LSU CN15-3	+5V(H) 0V(L)	Tetragon Motor Control Signal H: OFF L: ON
CN69-4	MGND	LSU CN15-4	0V	Ground
CN69-5	+24VM	LSU CN15-5	+24V	+24 VDC Power Supply

CN91

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN91-1	nSTB	CENTRONICS I/F	+5V 0V	Host Clock / Data Transfer Strobe (Host→Peripheral)
CN91-2	DATA0	CENTRONICS I/F	+5V(H) 0V(L)	Data Signal
CN91-3	DATA1	CENTRONICS I/F	+5V(H) 0V(L)	Data Signal
CN91-4	DATA2	CENTRONICS I/F	+5V(H) 0V(L)	Data Signal

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN91-5	DATA3	CENTRONICS I/F	+5V(H) 0V(L)	Data Signal
CN91-6	DATA4	CENTRONICS I/F	+5V(H) 0V(L)	Data Signal
CN91-7	DATA5	CENTRONICS I/F	+5V(H) 0V(L)	Data Signal
CN91-8	DATA6	CENTRONICS I/F	+5V(H) 0V(L)	Data Signal
CN91-9	DATA7	CENTRONICS I/F	+5V(H) 0V(L)	Data Signal
CN91-10	nACK	CENTRONICS I/F	+5V 0V	Peripheral Clock / Data Transfer Acknowledge (Peripheral→Host)
CN91-11	BUSY	CENTRONICS I/F	+5V 0V	Peripheral Busy (Peripheral→Host)
CN91-12	PE	CENTRONICS I/F	+5V 0V	Acknowledge Data Request / Paper Empty Condition (Peripheral→Host)
CN91-13	SELECT	CENTRONICS I/F	+5V 0V	Select Signal (Peripheral→Host)
CN91-14	nAUTOFD	CENTRONICS I/F	+5V 0V	Host Busy (Host→Peripheral)
CN91-15	Not Used	CENTRONICS I/F		Not Used

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN91-16	GND	CENTRONICS I/F	0V	Ground
CN91-17	FG	CENTRONICS I/F	0V	Ground
CN91-18	PLH	CENTRONICS I/F	+5V	+5V Pull Up
CN91-19	GND	CENTRONICS I/F	0V	Ground
CN91-20	GND	CENTRONICS I/F	0V	Ground
CN91-21	GND	CENTRONICS I/F	0V	Ground
CN91-22	GND	CENTRONICS I/F	0V	Ground
CN91-23	GND	CENTRONICS I/F	0V	Ground
CN91-24	GND	CENTRONICS I/F	0V	Ground
CN91-25	GND	CENTRONICS I/F	0V	Ground
CN91-26	GND	CENTRONICS I/F	0V	Ground
CN91-27	GND	CENTRONICS I/F	0V	Ground

SC PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN91-28	GND	CENTRONICS I/F	0V	Ground
CN91-29	GND	CENTRONICS I/F	0V	Ground
CN91-30	GND	CENTRONICS I/F	0V	Ground
CN91-31	nINIT	CENTRONICS I/F	+5V(H) 0V(L)	Reverse Request / Initialize (Host→Peripheral)
CN91-32	nFAULT	CENTRONICS I/F	+5V 0V	Data Available / Error Condition (Peripheral→Host)
CN91-33	Not Used	CENTRONICS I/F		Not Used
CN91-34	Not Used	CENTRONICS I/F		Not Used
CN91-35	Not Used	CENTRONICS I/F		Not Used
CN91-36	nSELIN	CENTRONICS I/F	+5V 0V	IEEE1284 Active (Host→Peripheral)

3.7. MJR PC Board

CN20

MJR PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN20-3	LT2(T)	Telephone Line		Line Signal
CN20-4	LT1(R)	Telephone Line		Line Signal

CN23
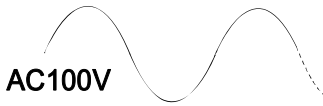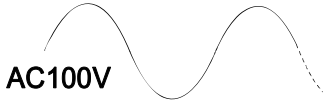
MJR PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN23-1	N.C.			Not Used
CN23-2	N.C.			Not Used
CN23-3	HLIN1	SRU PCB CN90-1		Line Signal for the Fax Handset
CN23-4	HLIN2	SRU PCB CN90-2		Line Signal for the Fax Handset
CN23-5	N.C.			Not Used

CN28 and CN29
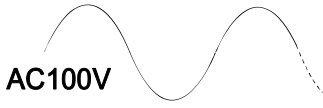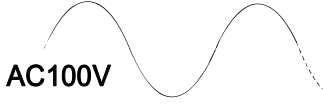
Refer to SC PC Board CN18.

3.8. Power Supply Unit
CN101

PS Unit Pin No.	Signal Name	Destination	Signal Waveform	Function
CN101-1	Black (L)	ACI PC Board	AC100V	AC Power Supply
CN101-2	N.C.			Not Used
CN101-3	White (N)	ACI PC Board	AC100V	AC Power Supply
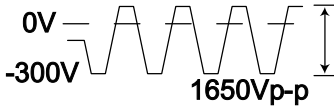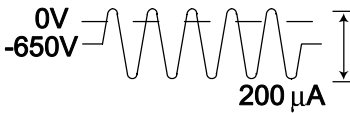
CN102

PS Unit Pin No.	Signal Name	Destination	Signal Waveform	Function
CN102-1	Black (L)	Fuser Lamp	AC100V	AC Power Supply
CN102-2	N.C.			Not Used
CN102-3	White (N)	Thermostat Thermal Fuse	AC100V	AC Power Supply
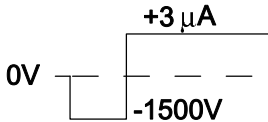
CN103
Refer to SC PC Board CN6 and CN53.

CN201

PS Unit Pin No.	Signal Name	Destination	Signal Waveform	Function
CN201-1	Development	Development Roller	0V -300V 1650Vp-p	Development Voltage (AC 1.65 kHz Square Wave) & DC Voltage
CN201-2	N.C.			Not Used
CN201-3	N.C.			Not Used
CN201-4	N.C.			Not Used
CN201-5	Charge	Bias Charge Roller	0V -650V 200 μA	Charge Current: 200 μA (AC 300 Hz Sine Wave) & DC Charge Voltage

CN202
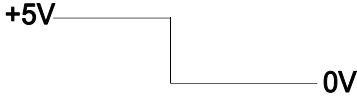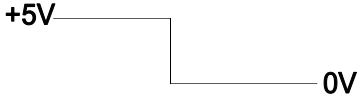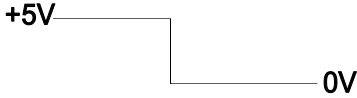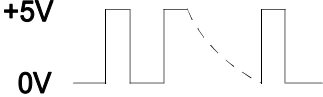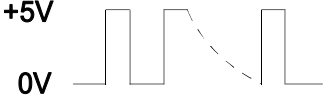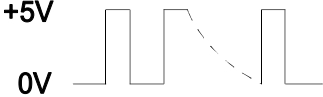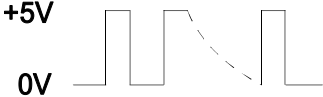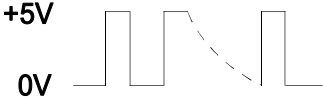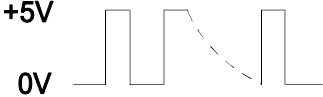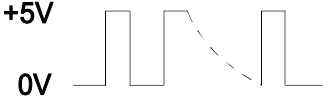
PS Unit Pin No.	Signal Name	Destination	Signal Waveform	Function
CN202	Transfer	Bias Transfer Roller	+3 μA 0V -1500V	(1)Transfer Current: (+3 μA) (2) Cleaning Voltage: (-1500 V)
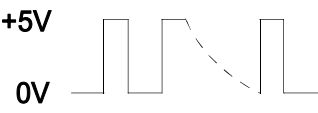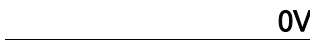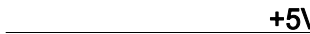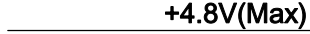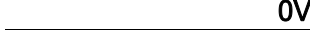
3.9. PNL PC Board
CN50
Refer to SC PC Board CN14.

LCD

PNL PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
LCD-1	RS	LCD Module-1	+5V ‾‾‾‾‾|__ 0V	Resister Select Signal H: Data Register L: Instruction Register
LCD-2	R/W	LCD Module-2	+5V ‾‾‾‾‾|__ 0V	Data Read/Write Select Signal H: Read L: Write
LCD-3	E	LCD Module-3	+5V ‾‾‾‾‾|__ 0V	Data Read/Write Enable Signal H: Enable L: Disable
LCD-4	DB0	LCD Module-4	+5V / 0V	Data Signal
LCD-5	DB1	LCD Module-5	+5V / 0V	Data Signal
LCD-6	DB2	LCD Module-6	+5V / 0V	Data Signal
LCD-7	DB3	LCD Module-7	+5V / 0V	Data Signal
LCD-8	DB4	LCD Module-8	+5V / 0V	Data Signal
LCD-9	DB5	LCD Module-9	+5V / 0V	Data Signal
LCD-10	DB6	LCD Module-10	+5V / 0V	Data Signal
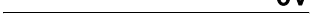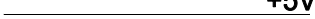
PNL PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
LCD-11	DB7	LCD Module-11	+5V ⎍⎍⎍ 0V	Data Signal
LCD-12	GND	LCD Module-12	0V	Ground
LCD-13	+5V	LCD Module-13	+5V	+5 VDC Power Supply
LCD-14	+5V	LCD Module-14	+5V	+5 VDC Power Supply
LCD-15	V5	LCD Module-15	+4.8V(Max)	Power Supply for LCD
LCD-16	GND	LCD Module-16	0V	Ground

3.10. SNS3 PC Board
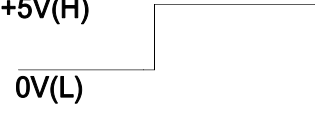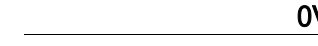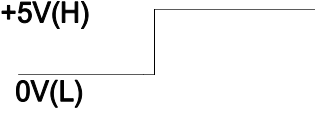
CN83
Refer to SC PC Board CN59.

CN84

SNS3 PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN84-1	GND	Toner Sensor	0V	Ground
CN84-2	TONER	Toner Sensor	Approx. +2 VDC	Remaining Toner Level Signal
CN84-3	+5V	Toner Sensor	+5V	+5 VDC Power Supply

3.11. SNS4 PC Board

CN85
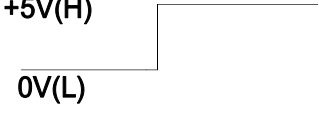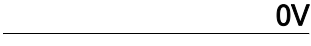
SNS3 PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN85-1	nCCHK1	SNS1 PCB CN81-1	+5V(H) ⎍ 0V(L)	No Cassette Detection Signal L: No Cassette
CN85-2	GND	SNS1 PCB CN81-2	0V	Ground
CN85-3	nRSEN	SNS1 PCB CN81-3	+5V(H) ⎍ 0V(L)	Timing Sensor Detection Signal L: Detect
CN85-4	LDRE	SNS1 PCB CN81-4	Approx. +2 VDC	Timing Sensor and No Cassette Sensor LED Drive Current

CN87

Refer to SC PC Board CN58.

3.12. SNS1 PC Board

CN80

SNS1 PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN80-1	nCCHK1	SNS2 PCB CN82-1	+5V(H)　　 0V(L)	No Cassette Detection Signal L: No Cassette
CN80-2	GND	SNS2 PCB CN82-2	0V	Ground
CN80-3	LDSC1	SNS2 PCB CN82-3	Approx. +1 VDC	No Cassette Sensor LED Drive Current

CN81
Refer to SNS4 PC Board CN85.

3.13. SNS2 PC Board

CN82
Refer to SNS1 PC Board CN80.

3.14. CCD PC Board

CN30
Refer to SC PC Board CN7.

3.15. ILS PC Board

CN73
Refer to SC PC Board CN57.

3.16. ACI PC Board
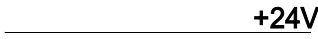
Refer to Power Supply Unit CN101.

3.17. CST2 PC Board (Optional)
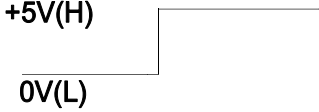
CN70

Refer to SC PC Board CN66.

CN71

CST2 PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN71-1	+24VM	Paper Feed Solenoid	+24V	+24 VDC Power Supply
CN70-2	nADF2	Paper Feed Solenoid	ON +24V (H) 0V (L)	Paper Feed Roller Solenoid Control Signal

CN74

CST2 PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN74-1	nCCHK2	SNS2 PCB (Optional) CN82-1	+5V(H) 0V(L)	No Cassette Detection Signal (2nd Cassette) L: No Cassette
CN74-2	GND	SNS2 PCB (Optional) CN82-2	0V	Ground
CN74-3	SNCMN	SNS2 PCB (Optional) CN82-3	+2V	+2 VDC Power Supply

3.18. SNS2 PC Board (Optional)

CN82

Refer to CST2 PC Board CN74.

3.19. SRU PC Board (Optional)

CN90

Refer to MJR PC Board CN23.

CN91

SRU PCB Pin No.	Signal Name	Destination	Signal Waveform	Function
CN91-1	N.C.			Not Used
CN91-2	MIC (+)	Telephone Handset CN		Handset Microphone
CN91-3	RCV (+)	Telephone Handset CN		Handset Receiver
CN91-4	RCV (-)	Telephone Handset CN		Handset Receiver
CN91-5	MIC (-)	Telephone Handset CN		Handset Microphone
CN91-6	TGND		0V	Ground

4 Troubleshooting

4.1. Initial Troubleshooting Flowchart

START

Plug the Power Cord in and turn Power Switch ON.

Does the unit power up normally? — No → Does the LCD display function correctly? — No → Troubleshoot Improper LCD Display (Sect. 4.2).

Yes

Yes → Troubleshoot any 3-digit INFO. CODE displayed (Sect. 4.3).

Does the unit produce normal copies? — No → Does the original document feed through correctly? — No → Troubleshoot the Document Feeder (Sect. 4.5)

Yes

Yes → Does the recording paper exit the unit? — No → Check for recording paper path problems.

Yes

Troubleshoot communication problems (transmission, reception, dialing, polling, information codes, or diagnostic codes.) (Sect. 4.6)

Troubleshoot printed copy quality problems (Sect. 4.4).

4.2. Improper LCD Display

START

Check connectors: CN14 (SC PCB) and CN50 (PNL1 PCB).

When pressing any key, do you hear the 'Pi-' sound from the Speaker? — No

Yes

Does CN14, pin 2 and pin 3 on the SC PCB measure +5VDC? — No

Yes

Replace the PNL1 PCB.

Reinstall the firmware.

Replace the SC PCB.

END

4.3. Information Codes (INFO. CODES)

The 3-digit information codes display to show the unit's status. These codes also print on the journal. The following table indicates appropriate sections for troubleshooting.

Code	Explanation	Phase	Section
001, 002, 007	Recording paper jam	C, D	4.3.8.
010	No recording paper	B, C	4.3.9.
030	Document misfeeding	B	4.3.10.
031	Document too long	C	4.3.10.
400	Transmission error	B	4.3.1.
401	Transmission error	B	4.3.2.
402	Transmission error	B	4.3.2.
403	Polling reception error	B	4.3.12.
404	Transmission error	B	4.3.3.
405	Transmission error	B	4.3.3.
407	Transmission error	D	4.3.3.
408	Transmission error	D	4.3.5.
409	Transmission error	D	4.3.5.
411	Polling reception error	B	4.3.12.
414	Polling reception error	B	4.3.12.
415	Remote side mis-operation	B	4.3.12.
416	Reception error	D	4.3.4.
417	Reception error	C	4.3.5.
418	Reception error	C	4.3.5.
420	Reception error	B	4.3.1.
422	Transmission error	B	4.3.2.
434	Signal noise level too high	B	4.3.6.
459	Reception error	C	4.3.7.
490	Reception error	C	4.3.5.
494	Reception error	C	4.3.7.
495	Reception error	C	4.3.7.
630	Remote unit Busy	B	4.3.11.
634	No busy tone detected	B	--
800 - 962	Advanced Communication error	--	--

Phase

Phase A	Phase B	Phase C	Phase D	Phase E
		Message Transmission		
	Facsimile Communication Procedure			
Facsimile Call				
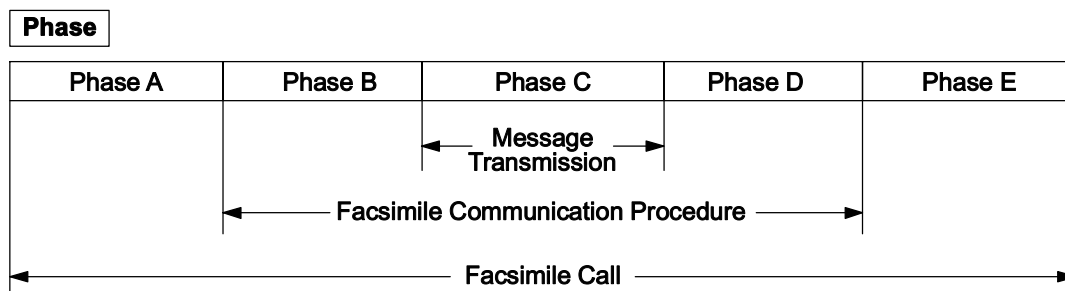
Phase A : Call establishment
Phase B : Pre-message procedure
Phase C : Message transmission
Phase D : Post-message procedure
Phase E : Call release

4.3.1. Information Codes: 400, 420

400 START

↓

Enable the monitor speaker. (Refer to Sect. 5.2 Parameter No. 008)

↓

Perform a transmission test to the remote unit in question.

↓

Does the remote unit send the CED and 300 bps Fax signal ? — **No** →

Yes

↓

Does the remote unit repeat the 300 bps signal every 3 sec.? — **No** →

Yes

↓

Is transmission to the reference unit successful? — **No** →

Yes

↓

1. Refer to Sect. 4.6.
2. Check the remote unit. (Remote unit is defective)

↓

END

---

1. Check the remote unit. (Remote unit is defective)
2. Check the telephone number to the remote unit.

---

1. Replace the MJR PCB.
2. Replace the SC PCB.

↓

Does the trouble still occur? — **No** →

Yes

---

420 START

↓

Is reception from a reference unit successful? — **No** →

Yes

↓

1. Misdialed call.
2. Check the remote unit. (Remote unit is defective)
3. Refer to Sect. 4.6.

↓

END

Check the line connection from the wall jack to the "Line" on the MJR PCB.

↓

Replace the SC PCB.

END

89

4.3.2. Information Codes: 401, 402, 422

```
                                        ( 402, 422
                                           START  )
                                              │
                                              ▼
                          ┌─────────────────────────────┐   No
                          │ Is Communication with the   │──────────┐
                          │ reference unit successful?  │          │
                          └─────────────────────────────┘          ▼
                                     │ Yes            ┌───────────────────────┐
                                     │                │ Replace the SC PCB.   │
                                     ▼                └───────────────────────┘
                          ┌─────────────────────────────┐
                          │ Check the remote unit in    │
                          │ question.                   │
                          │ (Remote unit is defective)  │
                          └─────────────────────────────┘
                                     │
                                     ▼
                                 (  END  )
```

```
   (  401
     START  )
        │
        ▼
┌─────────────────────────────┐   No
│ Is the ID Number programmed │──────────┐
│ into your machine?          │          │
└─────────────────────────────┘          ▼
        │ Yes               ┌───────────────────────────┐
        │                   │ Program the ID Number.    │
        ▼                   └───────────────────────────┘
┌─────────────────────────────┐   Yes
│ Is the Receiving unit set   │──────────┐
│ up for Selective Receive?   │          │
└─────────────────────────────┘          ▼
        │ No                ┌───────────────────────────┐
        │                   │ Check the Selective       │
        │                   │ Receive settings at the   │
        │                   │ receiving unit.           │
        ▼                   └───────────────────────────┘
┌─────────────────────────────┐   Yes
│ Is the Receiving unit set   │──────────┐
│ up for Password Reception?  │          │
└─────────────────────────────┘          ▼
        │ No                ┌───────────────────────────┐
        │                   │ Program the Receive       │
        │                   │ Password to match the     │
        │                   │ receiving unit.           │
        │                   │ (Fax Parameter No. 44)    │
        ▼                   └───────────────────────────┘
┌─────────────────────────────┐   Yes
│ Are you sending a           │──────────┐
│ Confidential Mail?          │          │
└─────────────────────────────┘          ▼
        │ No                ┌───────────────────────────┐
        │                   │ Check with the receiving  │
        │                   │ end, the mailboxes may    │
        │                   │ be full.                  │
        ▼                   └───────────────────────────┘
┌─────────────────────────────┐   Yes
│ Are you sending a document  │──────────┐
│ by Relayed Transmission?    │          │
└─────────────────────────────┘          ▼
        │ No                ┌───────────────────────────┐
        │                   │ Check the Relayed         │
        │                   │ Transmission settings at  │
        │                   │ the Relay Station.        │
        ▼                   └───────────────────────────┘
    (  END  )
```

4.3.3. Information Codes: 404, 405, 407

```
                              ( START )
                                  |
                                  v
              +---------------------------------+   No
              | Is communication with reference |--------+
              | unit successful?                |        |
              +---------------------------------+        v
                         | Yes              +------------------------------+
                         |                  | 1. Replace the MJR PCB.       |
                         v                  | 2. Replace the SC PCB.        |
              +---------------------------+ +------------------------------+
              | Change Function Parameter |                |
              | #010: Reduce Tx           |                v
              | Attenuation Level         | +------------------------------+  No
              +---------------------------+ | Does the problem still occur?|-----+
                         |                  +------------------------------+     |
     No                  v                            | Yes                      |
  +---------+--------------------------------+        v                          |
  |         | Does the problem still occur?  | +------------------------------+  |
  |         +--------------------------------+ | Check the telephone line     |  |
  |                    | Yes                   | condition.                   |  |
  |                    v                       +------------------------------+  |
  |         +---------------------------+                                        v
  |         | Change Function Parameter |                                   ( END )
  |         | #017: Reduce Tx Modem     |
  |         | Speed                     |
  |         +---------------------------+
  |                    |
  |                    v               +------------------------------+
  |   No               |               | Check the remote unit.       |
  |  +--------------------------------+ | (Recording paper may have    |
  |  |     | Does the problem still   | | run out or paper may have    |
  |  |     | occur?                   | | jammed.)                     |
  |  |     +--------------------------+ +------------------------------+
  |  |                | Yes                          |
  |  |                v                              v
  |  |     +---------------------------+ +------------------------------+  No
  |  |     | Change Funciotn Parameter | | Does the problem still occur?|----+
  |  |     | #014: Increase G3 Tx      | +------------------------------+    |
  |  |     | Equalization              |            | Yes                    |
  |  |     +---------------------------+            v                        |
  |  |                |                  +------------------------------+    |
  |  |   No           v                  | Refer to Sect. 4.6.          |    |
  |  |  +--------------------------------+ +------------------------------+  |
  |  |  |     | Does the problem still   |              |                    |
  |  |  |     | occur?                   |              |                    |
  |  |  |     +--------------------------+              |                    |
  |  |  |                | Yes                          |                    |
  |  |  |                v                              |                    |
  |  |  |     +---------------------------+             |                    |
  |  |  |     | Change Function Parameter |             |                    |
  |  |  |     | #025: Communication       |             |                    |
  |  |  |     | Startup to 2nd            |             |                    |
  |  |  |     +---------------------------+             |                    |
  |  |  |                |                              |                    |
  |  |  |                v               Yes            |                    |
  |  |  |     +--------------------------+--------------+                    |
  |  |  |     | Does the problem still   |                                   |
  |  |  |     | occur?                   |                                   |
  |  |  |     +--------------------------+                                   |
  |  |  |                | No                                                |
  +--+--+----------------+---------------------------------------------------+
                         v
                      ( END )
```

4.3.4. Information Code: 416

```
                          ┌─────────┐
                          │  START  │
                          └────┬────┘
                               │
                               ▼
              ┌───────────────────────────────┐   No
              │ Is communication with the     ├──────────────┐
              │ reference unit successful?    │              │
              └───────────────┬───────────────┘              ▼
                            Yes                  ┌───────────────────────────┐
                               │                 │ 1. Replace the MJR PCB.   │
                               ▼                 │ 2. Replace the SC PCB.    │
              ┌───────────────────────────────┐ └─────────────┬─────────────┘
              │ Change Function Parameter     │               │
              │ #011: Reduce Rx Sensitivity   │               ▼
              │ Level                         │ ┌───────────────────────────┐  No
              └───────────────┬───────────────┘ │ Does the problem still    ├──────┐
                              │                  │ occur?                    │      │
        No                    ▼                  └─────────────┬─────────────┘      │
     ┌────────┤ Does the problem still occur? │              Yes                    │
     │        └───────────────┬───────────────┘               │                    │
     │                      Yes                                ▼                    ▼
     │                        │                  ┌───────────────────────────┐ ┌─────────┐
     │                        ▼                  │ Check the telephone line  │ │   END   │
     │        ┌───────────────────────────────┐ │ condition.                │ └─────────┘
     │        │ Change Function Parameter     │ └───────────────────────────┘
     │        │ #023: Increase Training       │
     │        │ Check Period                  │
     │        └───────────────┬───────────────┘
     │    No                  ▼
     ├────────┤ Does the problem still occur? │
     │        └───────────────┬───────────────┘
     │                      Yes
     │                        ▼
     │        ┌───────────────────────────────┐
     │        │ Change Function Parameter     │
     │        │ #013: Increase G3 Rx          │
     │        │ Equalization                  │
     │        └───────────────┬───────────────┘
     │    No                  ▼           Yes
     ├────────┤ Does the problem still occur? ├──────────┐
     │        └───────────────────────────────┘          ▼
     │                                        ┌───────────────────────────┐
     │                                        │ Refer to Sect. 4.6.       │
     │                                        └───────────────────────────┘
     │        ┌─────────┐
     └───────▶│   END   │
              └─────────┘
```

4.3.5. Information Codes: 408, 409, 417, 418, 490

```
                    ( START )
                        |
                        v
    +----------------------------+      No
    | Is communication with      |------------------------------------------+
    | the reference unit         |                                          |
    | successful?                |                                          |
    +----------------------------+                                          v
                        | Yes                           +-----------------------------+
                        v                               | 1. Replace the MJR PCB.     |
    +----------------------------+  Transmitting        | 2. Replace the SC PCB.      |
    | Is the unit transmitting or|------------+         +-----------------------------+
    | receiving?                 |            |                        |
    +----------------------------+            |                        v
                        | Receiving           |         +-----------------------------+   No
                        v                     v         | Does the problem still occur?|----+
    +----------------------------+  +----------------------------+                       |
    | Change Function            |  | Change Function            |         | Yes         |
    | Parameter #071: Increase   |  | Parameter #010: Reduce     |         v             |
    | Error Tolerance            |  | Tx Attenuation Level       |  +-----------------------------+
    +----------------------------+  +----------------------------+  | Check the telephone line    |
                        |                     |                     | condition.                  |
  No                    v                     v              No     +-----------------------------+
 +--+  Does the problem still    | Does the problem still |---+                  |
 |  |  occur?                    | occur?                 |   |                  v
 |  +----------------------------+----------------------------+              ( END )
 |                  | Yes                    | Yes             |
 |                  v                        v                 |
 |  +----------------------------+  +----------------------------+
 |  | Change Function            |  | Change Function            |
 |  | Parameter #011: Reduce     |  | Parameter #017: Reduce     |
 |  | Rx Sensitivity Level       |  | Tx Modem Speed             |
 |  +----------------------------+  +----------------------------+
 |No                 |                        |             No  |
+--+ Does the problem still     | Does the problem still |-----+
|   | occur?                    | occur?                 |     |
|   +----------------------------+----------------------------+
|                   | Yes                    | Yes            |
|                   v                        v                |
|   +----------------------------+  +----------------------------+
|   | Change Function            |  | Change Function            |
|   | Parameter #018:Reduce      |  | Parameter #014:Increase    |
|   | Rx Modem Speed             |  | G3 Tx Equalization         |
|   +----------------------------+  +----------------------------+
|No                 |                        |            No   |
+--+ Does the problem still     | Does the problem still |----+
|   | occur?                    | occur?                 |    |
|   +----------------------------+----------------------------+
|                   | Yes                    | Yes            |
|                   v                        |                |
|   +----------------------------+           |                |
|   | Change Function            |           |                |
|   | Parameter #013: Increase   |           |                |
|   | G3 Rx Equalization         |           |                |
|   +----------------------------+           |                |
|No                 |            Yes         v                |
+--+ Does the problem still     | The telephone line may have |
|   | occur? |------------------>| a high level of white noise |
|   +--------+                   | and/or frequent impulse noise.
|                                | Ask the telephone company   |
|                                | to check the line.          |
|                                +-----------------------------+
|                   v                                         |
+---------------->( END )<------------------------------------+
```

93

4.3.6. Information Code: 434

```
                        ( START )
                            │
                            ▼
            ┌───────────────────────────┐   No
            │ Is communication with the │────────────────┐
            │ reference unit successful?│                │
            └───────────────────────────┘                ▼
                        │ Yes               ┌────────────────────────┐
                        │                   │ Replace the SC PCB.    │
                        │                   └────────────────────────┘
                        ▼
            ┌───────────────────────────┐   No
            │ Does the trouble occur    │────────────────┐
            │ regardless of the remote  │                │
            │ unit?                     │                ▼
            └───────────────────────────┘   ┌────────────────────────┐ Yes ┌──────────────────────────┐
                        │ Yes               │ Can the transmitter in │─────│ Check the remote unit in │
                        │                   │ question transmit to the│    │ question.                │
                        │                   │ other units?           │     │ (Remote unit is defective)│
                        │                   └────────────────────────┘     └──────────────────────────┘
                        │                               │ No
                        ▼                               ▼
      ┌──────────────────────────────┐  ┌───────────────────────────────────────────────┐
      │ The telephone line may have  │  │ Change the parameter in Service Mode 1.       │
      │ a high level of white noise  │  │ (Refer to Sect. 5.1.2.)                       │
      │ and/or frequent impulse noise.│ │     for transmitter: #010: Increase Tx Level  │
      │ Ask the telephone company    │  │     for receiver   : #011: Reduce Rx Sensitivity Level│
      │ to check the line.           │  └───────────────────────────────────────────────┘
      └──────────────────────────────┘
                        │
                        ▼
                    (  END  )
```

4.3.7. Information Codes: 459, 494, 495

START

Check the line connection between the telephone jack on the wall and the MJR PCB.

Is communication with the reference unit successful? — No

Yes

1. Replace the MJR PCB.
2. Replace the SC PCB.

Does the problem still occur? — No

Yes

Check the telephone line condition.

END

Does the trouble occur regardless of the remote unit? — No

Yes

1. Check the remote unit in question.
   (Remote unit is defective)
2. Refer to Sect. 4.6.

If the telephone line frequently disconnects at the beginning of each communication, ask the telephone company to check the line.

END

4.3.8. Information Codes: 001, 002, 007 (Recording Paper Jam)

```
                    START

        Is the recording paper size and        No
        thickness within specification?  ──────────────┐
                    │                                   │
                    │ Yes                    ┌──────────────────────────┐
                    │                        │ Replace with correct paper.│
                    │ ◄──────────────────────└──────────────────────────┘
                    │
        Is the recording paper loaded in      No
        the Cassette properly?  ───────────────────────┐
                    │                                   │
                    │ Yes                    ┌──────────────────────────┐
                    │                        │ Load the paper correctly. │
                    │ ◄──────────────────────└──────────────────────────┘
                    │
        Is the paper cassette functional?      No
                    │  ─────────────────────────────────┐
                    │ Yes                                │
                    │                        ┌──────────────────────────┐
                    │                        │ Replace the paper cassette.│
                    │ ◄──────────────────────└──────────────────────────┘
                    │
        Check the Paper Feed Roller
        Assembly.
                    │
                    │
        Check all Sensors and Actuators
        (No Paper Sensor, Timing
        Sensor, Paper Exit Sensor).
                    │
                    │
        Check the Paper Feed Solenoid.
                    │
                    END
```

4.3.9. Information Code: 010 (No Recording Paper)

```
                    ┌─────────┐
                    │  START  │
                    └─────────┘
                         │
                         ▼
        ┌──────────────────────────┐   No
        │ Is the Paper Cassette     ├──────────────┐
        │ seated properly           │              │
        └──────────────────────────┘              ▼
                    │ Yes              ┌──────────────────────┐
                    │                  │ Reseat the cassette. │
                    │◄─────────────────┤                      │
                    ▼                  └──────────────────────┘
        ┌──────────────────────────┐   No
        │ Is the recording paper    ├──────────────┐
        │ loaded in the cassette?   │              │
        └──────────────────────────┘              ▼
                    │ Yes              ┌──────────────────────┐
                    │                  │ Load the paper.      │
                    │◄─────────────────┤                      │
                    ▼                  └──────────────────────┘
        ┌──────────────────────────┐   No
        │ Is the No Paper Actuator  ├──────────────┐
        │ operational?              │              │
        └──────────────────────────┘              ▼
                    │ Yes              ┌──────────────────────┐
                    │                  │ Replace the Actuator.│
                    │◄─────────────────┤                      │
                    ▼                  └──────────────────────┘
        ┌──────────────────────────┐   No
        │ Is the No Paper Sensor    ├──────────────┐
        │ operational?              │              │
        └──────────────────────────┘              ▼
                    │ Yes              ┌──────────────────────────┐
                    │                  │ Replace the No Paper     │
                    │◄─────────────────┤ Sensor.                  │
                    ▼                  └──────────────────────────┘
        ┌──────────────────────────┐   No
        │ Does the Paper Feed Roller├──────────────┐
        │ turn?                     │              │
        └──────────────────────────┘              ▼
                    │ Yes              ┌──────────────────────────┐
                    │                  │ Overhaul the Clutch Gear │
                    │◄─────────────────┤ Assembly.                │
                    ▼                  └──────────────────────────┘
               ┌─────────┐
               │  END    │
               └─────────┘
```

4.3.10. Information Codes: 030, 031 (Document Jam)

```
                        ( START )
                            │
                            ▼
            ┌──────────────────────────┐   Yes   ┌──────────────────────┐
            │ Is the document path     ├────────▶│ Remove the blockage. │
            │ blocked?                 │          └──────────┬───────────┘
            └──────────────────────────┘                     │
                        │ No                                  │
                        ◀────────────────────────────────────┘
                        ▼
            ┌──────────────────────────┐   No    ┌──────────────────────────┐
            │ Does the Tx Motor rotate?├────────▶│ 1. Replace the Tx Motor. │
            └──────────────────────────┘          │ 2. Replace the SC PCB.   │
                        │ Yes                      └──────────┬───────────────┘
                        ◀────────────────────────────────────┘
                        ▼
            ┌──────────────────────────┐   No    ┌──────────────────────────┐
            │ Does the document feed   ├────────▶│ Check all gears and      │
            │ into the unit?           │          │ rollers.                 │
            └──────────────────────────┘          └──────────┬───────────────┘
                        │ Yes                                 │
                        ◀────────────────────────────────────┘
                        ▼
            ┌──────────────────────────┐
            │ Does the voltage on      │   No    ┌──────────────────────────┐
            │ A-Point and B-Point      ├────────▶│ Replace the PNL1 PCB.    │
            │ Sensor Pin 2 of PNL1     │          └──────────┬───────────────┘
            │ PCB, vary between 0 and  │                     │
            │ +5V when a document is   │                     │
            │ set and removed?         │                     │
            └──────────────────────────┘                     │
                        │ Yes                                 │
                        ▼                                     │
                     ( END )◀────────────────────────────────┘
```

4.3.11. Information Code: 630 (Dialing Error)

```
                ( START )
                    │
                    ▼
        ┌──────────────────────┐   No    ┌──────────────────────────┐
        │ Is there a dial tone │────────▶│ 1. Connect the telephone │
        │ when MONITOR button  │          │    line correctly.       │
        │ is pressed?          │          │ 2. Check the telephone   │
        └──────────────────────┘          │    line.                 │
                    │ Yes                  └──────────┬───────────────┘
                    ◀────────────────────────────────┘
                    ▼
        ┌──────────────────────┐   No    ┌──────────────────────┐   No   ┌──────────────────────────┐
        │ Is the remote        │────────▶│ Can the unit dial    │───────▶│ 1. Check all connectors. │
        │ machine busy?        │          │ the reference unit?  │         │ 2. Replace the SC PCB.   │
        └──────────────────────┘          └──────────────────────┘         └──────────┬───────────────┘
                    │ Yes                             │ Yes                            │
                    ▼                                 ▼                                │
        ┌──────────────────────┐          ┌──────────────────────────┐                │
        │ Press the REDIAL     │          │ 1. The remote machine is │                │
        │ button to retry      │          │    defective.            │                │
        │ connection.          │          │ 2. Telephone line        │                │
        └──────────┬───────────┘          │    quality is poor.      │                │
                   │                       │    (Refer to Sect. 4.6.) │                │
                   ▼                       └──────────────────────────┘                ▼
                ( END )                                                             ( END )
```

4.3.12. Information Codes: 403, 411, 414, 415 (Polling Operator Trouble)

415

START

↓

Inform the remote side (receiving side) that their machine does not have polling transmission capability.

↓

END

403, 411, 414

START

↓

Review the polling operation referring to the Operating Instructions.

↓

Does the remote side have polling transmission capability? —— No —→ END

↓ Yes

Is the remote side set to polling transmission (Polled) Mode? —— No —→ Ask the remote side to set their unit for polling operation.

↓ Yes

Check the password between the two units to ensure it matches.

↓

END

Polling communication with 4-digit password is not an ITU-T Standard feature.
If the transmitter and receiver are of different manufacturers, polling communication with password *may not* be possible.

99

4.4. Printed Copy Quality Problems

4.4.1. Black Copy

Paper Travel ↑

```
                          START
                            │
                            ▼
        ┌─────────────────────────┐    Yes
        │ Is the printout in Service │ ─────────────┐
        │ Mode 3 normal?            │               │
        └─────────────────────────┘               ▼
                            │ No       ┌────────────────────────────────┐
                            │          │ Check the Scanner mechanism.   │
                            │◄─────────└────────────────────────────────┘
                            ▼
        ┌─────────────────────────┐    No
        │ Is the Toner Cartridge   │ ──────────────┐
        │ operational?             │               │
        └─────────────────────────┘               ▼
                            │ Yes      ┌────────────────────────────────┐
                            │          │ Replace the Toner Cartridge.   │
                            │◄─────────└────────────────────────────────┘
                            ▼
        ┌─────────────────────────┐    No
        │ Is the Power Supply      │ ──────────────┐
        │ Unit normal?             │               │
        └─────────────────────────┘               ▼
                            │ Yes      ┌────────────────────────────────────────┐
                            │          │ 1. Check all connectors and voltages   │
                            │          │    on the Power Supply Unit.           │
                            │          │ 2. Check the contacts between          │
                            │          │    PSU and Toner Cartridge.            │
                            │          │ 3. Replace the PSU.                    │
                            │◄─────────└────────────────────────────────────────┘
                            ▼
        ┌─────────────────────────┐    No
        │ Is the SC PCB normal?    │ ──────────────┐
        └─────────────────────────┘               ▼
                            │ Yes      ┌────────────────────────────────────────┐
                            │          │ 1. Check all connectors and voltages   │
                            │          │    on the SC PCB.                      │
                            │          │ 2. Replace the SC PCB.                 │
                            │◄─────────└────────────────────────────────────────┘
                            ▼
                          END
```

4.4.2. Blank Copy

Paper Travel ↑

START

Is the printout in Service Mode 3 normal? — **Yes** → Check the Scanner mechanism.

No ↓

Is the Toner Cartridge operational? — **No** → Replace the Toner Cartridge .

Yes ↓

Are there any foreign particles or stains on the BTR? — **Yes** →
1. Clean the BTR with a soft, dry cloth.
2. Replace the BTR.

No ↓

Is the Power Supply Unit normal? — **No** →
1. Check all connectors and voltages on the Power Supply Unit.
2. Check the Connector and voltage on the Power Supply Unit.
3. Replace the Power Supply Unit.

Yes ↓

Are there any foreign particles or stains blocking the Laser Beam path? — **Yes** →
1. Remove the particles from the laser beam path or clean the stains.
2. Replace the Laser Unit (LSU).

No ↓

Is the SC PCB normal? — **No** →
1. Check all connectors and voltages on the SC PCB.
2. Replace the SC PCB.

Yes ↓

END

4.4.3. Vertical White Lines

Paper Travel ↑

START

Is the printout in Service Mode 3 normal? — **Yes** → Check the Scanner mechanism.

No ↓

Is the recording paper damp? — **Yes** → Replace the recording paper.

No ↓

Is the Toner Cartridge operational? — **No** → Replace the Toner Cartridge .

Yes ↓

Are there any foreign particles or stains blocking the Laser Beam path? — **Yes** →
1. Remove the particles from the laser beam path or clean the stains.
2. Replace the Laser Unit (LSU).

No ↓

Are there any foreign particles or stains on the BTR? — **Yes** →
1. Clean the BTR with a soft, dry cloth.
2. Replace the BTR.

No ↓

Are the Fuser and Pressure Roller surfaces clean? — **No** → Clean or replace the rollers.

Yes ↓

END

4.4.4. Ghost Images

A
A

A A A
Paper Travel ↑

START

Is the printout in Service Mode 3 normal? — Yes → Check the Scanner mechanism.

No ↓

Is the recording paper damp? — Yes → Replace the recording paper.

No ↓

Is the Toner Cartridge operational? — No → Replace the Toner Cartridge.

Yes ↓

Are there any foreign particles or stains on the BTR? — Yes →
1. Clean the BTR with a soft, dry cloth.
2. Replace the BTR.

No ↓

Are the Fuser and Pressure Roller surfaces clean? — No → Clean or replace the rollers.

Yes ↓

END

4.4.5.   Vertical Dark Lines

P P

Paper Travel ↑

```
                  ( START )
                      |
                      v
   +----------------------+      Yes
   | Is the printout in   |------------>  +----------------------------+
   | Service Mode 3       |               | Check the Scanner          |
   | normal?              |               | mechanism.                 |
   +----------------------+               +----------------------------+
          | No                                      |
          v  <-------------------------------------+
   +----------------------+      No
   | Is the Toner         |------------>  +----------------------------+
   | Cartridge            |               | Replace the Toner          |
   | operational?         |               | Cartridge.                 |
   +----------------------+               +----------------------------+
          | Yes                                     |
          v  <-------------------------------------+
   +----------------------+      Yes
   | Are there any        |------------>  +----------------------------+
   | foreign particles    |               | 1. Clean the BTR with a    |
   | or stains on the BTR?|               |    soft, dry cloth.        |
   +----------------------+               | 2. Replace the BTR.        |
          | No                            +----------------------------+
          v  <-------------------------------------+
   +----------------------+      No
   | Is the Laser Unit    |------------>  +----------------------------+
   | (LSU) normal?        |               | Replace the Laser Unit     |
   +----------------------+               | (LSU).                     |
          | Yes                           +----------------------------+
          v  <-------------------------------------+
   +----------------------+      No
   | Are the Fuser and    |------------>  +----------------------------+
   | Pressure Roller      |               | Clean or replace the       |
   | surfaces clean?      |               | rollers.                   |
   +----------------------+               +----------------------------+
          | Yes                                     |
          v  <-------------------------------------+
                  ( END )
```

4.4.6. Horizontal Dark Lines

P

Paper Travel ↑

```
                    ┌─────────┐
                    │  START  │
                    └─────────┘
                         │
                         ▼
   ┌──────────────────────────┐  Yes
   │ Is the printout in Service├──────────────────┐
   │ Mode 3 normal?           │                   │
   └──────────────────────────┘                   ▼
                │ No               ┌──────────────────────────────┐
                │                  │ Check the Scanner mechanism. │
                │                  └──────────────────────────────┘
                ▼
   ┌──────────────────────────┐  No
   │ Is the Toner Cartridge   ├──────────────────┐
   │ operational?             │                   ▼
   └──────────────────────────┘   ┌──────────────────────────────┐
                │ Yes              │ Replace the Toner Cartridge. │
                │                  └──────────────────────────────┘
                ▼
   ┌──────────────────────────┐  Yes
   │ Are there any foreign    ├──────────────────┐
   │ particles or stains on the BTR?│             ▼
   └──────────────────────────┘   ┌──────────────────────────────┐
                │ No               │ 1. Clean the BTR with a soft,│
                │                  │    dry cloth.                │
                │                  │ 2. Replace the BTR.          │
                ▼                  └──────────────────────────────┘
   ┌──────────────────────────┐  No
   │ Is the Laser Unit (LSU) normal?├────────────┐
   └──────────────────────────┘                   ▼
                │ Yes              ┌──────────────────────────────┐
                │                  │ Replace the Laser Unit (LSU).│
                │                  └──────────────────────────────┘
                ▼
   ┌──────────────────────────┐  No
   │ Is the Power Supply Unit ├──────────────────┐
   │ normal?                  │                   ▼
   └──────────────────────────┘   ┌──────────────────────────────┐
                │ Yes              │ 1. Check all connectors and  │
                │                  │    voltages on the Power     │
                │                  │    Supply Unit .             │
                │                  │ 2. Check the Connector and   │
                │                  │    voltage on the Power      │
                │                  │    Supply Unit.              │
                │                  │ 3. Replace the Power Supply  │
                │                  │    Unit.                     │
                ▼                  └──────────────────────────────┘
   ┌──────────────────────────┐  No
   │ Are the Fuser and Pressure├──────────────────┐
   │ Roller surfaces clean?   │                   ▼
   └──────────────────────────┘   ┌──────────────────────────────┐
                │ Yes              │ Clean or replace the rollers.│
                │                  └──────────────────────────────┘
                ▼
           ┌─────────┐
           │   END   │
           └─────────┘
```

4.4.7. Dark Background

P

Paper Travel ↑

START

```
Is the printout in Service          Yes
Mode 3 normal?        ─────────────────────┐
        │ No                                │
        │                          Check the Scanner mechanism.
        ▼
Is the recording paper damp?        Yes
        │                        ──────────────────┐
        │ No                                        │
        │                          Replace the recording paper.
        ▼
Is the Toner Cartridge              No
operational?          ──────────────────────────────┐
        │                                            │
        │                          Replace the Toner Cartridge.
        │ Yes
        ▼
Is the Laser Unit (LSU) normal?     No
        │                        ──────────────────┐
        │                                           │
        │ Yes                      Replace the Laser Unit (LSU).
        ▼
Is the Power Supply Unit            No
normal?              ───────────────────────────────┐
        │                                            │
        │                          1. Check all connectors and
        │ Yes                          voltages on the Power Supply
        │                               Unit.
        │                          2. Check the Connector and
        │                               voltages on the Power
        │                               Supply Unit.
        │                          3. Replace the Power Supply Unit.
        ▼
Are the Fuser and Pressure          No
Roller surfaces clean?   ──────────────────┐
        │                                   │
        │ Yes                      Clean or replace the rollers.
        ▼
END
```

4.4.8. Light Print

P

Paper Travel

START

Is the printout in Service Mode 3 normal?

Yes → Check the Scanner mechanism.

No

Is the recording paper damp?

Yes → Replace the paper.

No

Is the Toner Cartridge operational?

No → Replace the Toner Cartridge.

Yes

Are there any foreign particles or stains blocking the Laser Unit path?

Yes →
1. Remove the particles from the laser beam path or clean the stains.
2. Replace the LSU.

No

Is the Power Supply Unit normal?

No →
1. Check all connectors and voltages on the Power Supply Unit.
2. Replace the Power Supply Unit.

Yes

Are the Fuser and Pressure Roller surfaces clean?

No → Clean or replace the rollers.

Yes

END

4.4.9. Horizontal White Lines

P ↑ Paper Travel

START

Is the printout in Service Mode 3 normal? — Yes → **Check the Scanner mechanism.**

No ↓

Is the recording paper damp? — Yes → **Replace the recording paper.**

No ↓

Is the Toner Cartridge operational? — No → **Replace the Toner Cartridge.**

Yes ↓

Are there any foreign particles or stains on the BTR? — Yes →
1. Clean the BTR with a soft, dry cloth.
2. Replace the BTR.

No ↓

Is the Power Supply Unit normal? — No →
1. Check all connectors and voltages on the Power Supply Unit.
2. Replace the Power Supply Unit.

Yes ↓

Are the Fuser and Pressure Roller surfaces clean? — No → **Clean or replace the rollers.**

Yes ↓

END

4.4.10. Improper Fusing (Printed image does not bond to the paper)

```
                    ( START )
                        |
                        v
        +-------------------------------+   Yes
        | Is the recording paper damp?  |-------------->+
        +-------------------------------+               |
                        | No                            v
                        |               +-------------------------------+
                        |               |  Replace the recording paper. |
                        |               +-------------------------------+
                        |<------------------------------+
                        v
        +-------------------------------+   No
        |   Is the Fuser Unit normal?   |-------------->+
        +-------------------------------+               |
                        | Yes                           v
                        |               +-----------------------------------+
                        |               | Replace the Fuser Unit. (See Note)|
                        |               +-----------------------------------+
                        |<------------------------------+
                        v
                    (  END  )
```

Note:

Replace the entire Fuser Unit when the Thermostat, the Thermal Fuse or the Thermistor Assembly becomes an open-circuit.

4.4.11. Voids in Solid Areas

Paper Travel ↑

START

Is the recording paper damp? — Yes → Replace the recording paper.

No

Is the Toner Cartridge operational? — No → Replace the Toner Cartridge.

Yes

Are the Fuser and Pressure Roller surfaces clean? — No → Clean or replace the rollers.

Yes

END

4.4.12. Black Dots

Paper Travel

START

Is the Toner Cartridge operational? —No→ Replace the Toner Cartridge.

Yes

Are the Fuser and Pressure Roller surfaces clean? —No→ Clean or replace the rollers.

Yes

END

4.4.13. Recording Paper Creases

Paper Travel ↑

```
        ( START )
            |
            v
+----------------------+   Yes
| Is the recording     |--------------------+
| paper damp?          |                    v
+----------------------+        +----------------------------+
            | No                | Replace the recording paper.|
            |                   +----------------------------+
            |<-------------------------------|
            v
+----------------------+   Yes
| Are there any foreign|--------------------+
| particles or stains  |                    v
| in the paper path?   |        +----------------------------+
+----------------------+        | Remove any obstructions and|
            | No                | clean the paper path.      |
            |                   +----------------------------+
            |<-------------------------------|
            v
+----------------------+   Yes
| Is the recording     |--------------------+
| paper skewing?       |                    v
+----------------------+        +----------------------------+
            | No                | Ensure the paper is set     |
            |                   | under the Paper Separation  |
            |                   | Clips in the Cassette.      |
            |                   +----------------------------+
            |<-------------------------------|
            v
+----------------------+   Yes
| Are there any foreign|--------------------+
| particles or stains  |                    v
| in the Fuser Unit?   |        +------------------------------+
+----------------------+        | 1. Remove any foreign        |
            | No                |    particles or clean the    |
            |                   |    stains.                   |
            |                   | 2. Replace the Fuser Unit.   |
            |                   +------------------------------+
            |<-------------------------------|
            v
        ( END )
```

4.4.14. Poor Printed Copy Quality

```
                    ( START )
                        │
                        ▼
        ┌───────────────────────────────┐   No
        │ Is the Test Pattern printout  │─────────────┐
        │ in Service Mode 3 normal?     │             │
        └───────────────────────────────┘             ▼
                        │ Yes          ┌──────────────────────────────────┐
                        │              │ 1. Replace the SC PCB.           │
                        │              │ 2. Replace the Laser Unit (LSU). │
                        │              │ 3. Replace the Power Supply Unit.│
                        │              │ 4. Replace the Toner Cartridge . │
                        │              └──────────────────────────────────┘
                        │◄────────────────────────────┘
                        ▼
        ┌───────────────────────────────┐
        │ Make a local copy.            │
        └───────────────────────────────┘
                        │
                        ▼
        ┌───────────────────────────────┐   No
        │ Is the printed copy correct?  │─────────────┐
        └───────────────────────────────┘             ▼
                        │ Yes          ┌──────────────────────────────────┐
                        │              │ Check the Transmission Block     │
                        │              │ (CN30 on the CCD PCB and CN7 on   │
                        │              │ the SC PCB.                      │
                        │              └──────────────────────────────────┘
                        │◄────────────────────────────┘
                        ▼
        ┌───────────────────────────────┐
        │ Perform a receiving test      │
        │ with the reference  fax unit. │
        └───────────────────────────────┘
                        │
                        ▼
        ┌───────────────────────────────┐   No
        │ Is the received copy correct? │─────────────┐
        └───────────────────────────────┘             ▼
                        │ Yes          ┌──────────────────────────────────┐
                        │              │ 1. Check the CN18 on the SC PCB. │
                        │              │ 2. Check the CN28 and 29 on the  │
                        │              │    MJR PCB.                      │
                        │              │ 3. Check the Telephone Line Cable.│
                        │              │ 4. Replace the SC PCB.           │
                        │              └──────────────────────────────────┘
                        │◄────────────────────────────┘
                        ▼
        ┌───────────────────────────────┐   No
        │ Is a poor copy printed only   │─────────────┐
        │ when receiving from a         │             ▼
        │ specific transmitter?         │   ┌──────────────────────────────┐
        └───────────────────────────────┘   │ Telephone line quality is poor.│
                        │ Yes               │ (Refer to 4.6.)              │
                        ▼                   └──────────────────────────────┘
        ┌───────────────────────────────┐
        │ The transmitting machine      │
        │ may be defective.             │
        └───────────────────────────────┘
                        │
                        ▼
                    ( END )
```

4.4.15. Abnormal Printing

```
                    ( START )
                        │
                        ▼
         ┌──────────────────────────────┐   No
         │ Is the recording paper loaded │──────────────┐
         │ in the Cassette properly?     │              │
         └──────────────────────────────┘              ▼
                   │ Yes              ┌───────────────────────────────────────┐
                   │                  │ 1. Adjust the Paper Width Guide.       │
                   │                  │ 2. Adjust the Paper Length Guide.      │
                   │                  │ 3. Ensure the paper is under the Paper │
                   │                  │    Separation Clips.                   │
                   │                  └───────────────────────────────────────┘
                   ▼                                    │
         ┌──────────────────────────────┐   No          │
         │ Is the recording paper size and│─────────────┤
         │ thickness within specification?│             ▼
         └──────────────────────────────┘   ┌───────────────────────────────┐
                   │ Yes                     │ Replace with correct paper.    │
                   │                         └───────────────────────────────┘
                   ▼                                    │
         ┌──────────────────────────────┐   No          │
         │ Is a Panasonic Toner          │─────────────┤
         │ Cartridge being used?         │             ▼
         └──────────────────────────────┘   ┌───────────────────────────────────────┐
                   │ Yes                     │ Replace with a Panasonic Toner Cartridge.│
                   │                         └───────────────────────────────────────┘
                   ▼                                    │
         ┌──────────────────────────────┐   No          │
         │ Are all switches and sensors  │─────────────┤
         │ operating properly?           │             ▼
         └──────────────────────────────┘   ┌───────────────────────────────┐
                   │ Yes                     │ Adjust, clean or replace.      │
                   │                         └───────────────────────────────┘
                   ▼                                    │
         ┌──────────────────────────────┐   Yes         │
         │ Are there any foreign particles│────────────┤
         │ or paper pieces in the receiver│            ▼
         │ unit?                          │  ┌───────────────────────────────────────┐
         └──────────────────────────────┘   │ Remove the foreign particles or paper  │
                   │ No                      │ pieces from the receiver unit.         │
                   │                         └───────────────────────────────────────┘
                   ▼                                    │
         ┌──────────────────────────────┐   No          │
         │ Do the rollers rotate properly?│────────────┤
         └──────────────────────────────┘             ▼
                   │ Yes              ┌───────────────────────────────────────┐
                   │                  │ 1. Check all rollers, gears, drive clutches and│
                   │                  │    springs.                            │
                   │                  │ 2. Adjust or replace any defective parts.│
                   │                  └───────────────────────────────────────┘
                   ▼                                    │
         ┌──────────────────────────────┐   No          │
         │ Is the receiving mechanism    │─────────────┤
         │ operating correctly?          │             ▼
         └──────────────────────────────┘   ┌───────────────────────────────────────┐
                   │ Yes                     │ Adjust or replace any defective parts. │
                   │                         └───────────────────────────────────────┘
                   ▼                                    │
                 ( END ) ◄───────────────────────────────┘
```

4.4.16. Scanned Copy Quality Problems

```
                    ( START )
                        |
                        v
    +---------------------------+   Yes
    | Is the LED Array abnormal?|------------------+
    +---------------------------+                  |
                No |                               v
                   |               +---------------------------------+
                   |               | Replace the LED Array.          |
                   |               +---------------------------------+
                   |<------------------------------+
                   v
    +---------------------------------+   Yes
    | Are there any foreign particles |----------------+
    | or paper pieces in the          |                |
    | scanning area?                  |                v
    +---------------------------------+   +---------------------------------+
                No |                      | Remove the foreign particles or |
                   |                      | paper pieces from the scanning  |
                   |                      | area.                           |
                   |                      +---------------------------------+
                   |<---------------------------+
                   v
    +---------------------------+   Yes
    | Is the scanning area dirty?|---------------+
    +---------------------------+                |
                No |                             v
                   |         +-------------------------------------------+
                   |         | 1. Clean the Scanning Glass (Sect. 2.2.4.).|
                   |         | 2. Clean Mirrors 1, 2 and 3 (Sect. 2.2.8.).|
                   |         +-------------------------------------------+
                   |<----------------------------+
                   v
    +---------------------------+   Yes
    | Are the Transmitting       |--------------+
    | Rollers dirty?             |              |
    +---------------------------+               v
                No |                +-------------------------------+
                   |                | Clean the rollers (Sect. 2.2.4.).|
                   |                +-------------------------------+
                   |<----------------------------+
                   v
    +---------------------------------+   Yes
    | Is the Scanner Assembly abnormal?|------------+
    +---------------------------------+             |
                No |                                v
                   |    +-------------------------------------------------+
                   |    | 1. Check CN7 (SC PCB).                          |
                   |    | 2. Check CN30 (CCD PCB).                        |
                   |    | 3. Replace the Scanner Block (321) (Sect. 2.2.4.).|
                   |    | 4. Replace the SC PCB (Sect. 2.2.10).           |
                   |    +-------------------------------------------------+
                   v
                ( END )
```

4.5. Document Feeder (ADF)

4.5.1. No Document Feed

```
                    ( START )
                        │
                        ▼
        ┌──────────────────────────────┐   No
        │ Is the document set properly? │───────────┐
        └──────────────────────────────┘           │
                    │ Yes                           ▼
                        │              ┌──────────────────────────────┐
                        │              │ Set the document properly.   │
                        ▼              └──────────────────────────────┘
        ┌──────────────────────────────┐   No
        │ Is the document thickness or  │───────────┐
        │ size within specification?    │           │
        └──────────────────────────────┘           ▼
                    │ Yes              ┌──────────────────────────────┐
                        │              │ Make a copy or cut the       │
                        │              │ document to the spec. size.  │
                        ▼              └──────────────────────────────┘
        ┌──────────────────────────────┐   No
        │ Is the "Pi.." tone generated  │───────────┐
        │ when the document is set?     │           │
        └──────────────────────────────┘           ▼
                    │ Yes              ┌──────────────────────────┐   No
                        │              │ Does the ADF Sensor      │────────┐
                        │              │ actuator move smoothly?  │        │
                        │              └──────────────────────────┘        ▼
                        │                    │ Yes        ┌──────────────────────────────┐
                        │                        │        │ Adjust or replace the        │
                        │                        ▼        │ actuator.                    │
                        │              ┌──────────────────────────┐
                        │              │ Replace the PNL PCB.     │
                        ▼              └──────────────────────────┘
        ┌──────────────────────────────┐   No
        │ Does the ADF Roller rotate?   │───────────┐
        └──────────────────────────────┘           ▼
                    │ Yes              ┌──────────────────────────┐
                        │              │ Replace the Transmit     │
                        │              │ Motor.                   │
                        │              └──────────────────────────┘
                        │                        │
                        │                        ▼
                        │              ┌──────────────────────────┐   No
                        │              │ Is the trouble solved?   │────────┐
                        │              └──────────────────────────┘        ▼
                        │                    │ Yes        ┌──────────────────────────────┐
                        │                        │        │ Replace the PNL PCB.         │
                        │                        ▼        └──────────────────────────────┘
                        │                    ( END )
                        ▼
        ┌──────────────────────────────┐   No
        │ Is the ADF Roller surface     │───────────┐
        │ dirty?                        │           ▼
        └──────────────────────────────┘   ┌──────────────────────────┐
                    │ Yes                   │ Adjust the separator     │
                        │                   │ pressure.                │
                        ▼                   └──────────────────────────┘
        ┌──────────────────────────────┐            │
        │ Clean the ADF Roller surface. │            ▼
        └──────────────────────────────┘   ┌──────────────────────────┐   No
                        │                   │ Is the trouble solved?   │────────┐
                        │◄──────────────────└──────────────────────────┘        ▼
                        │                        Yes   ┌──────────────────────────────┐
                        ▼                              │ Replace the ADF Roller or    │
                    ( END )                            │ Separation Rubber or both.   │
                                                       └──────────────────────────────┘
```

4.5.2. Document does not feed or Multiple feeds

```
                         ┌──────────┐
                         │  START   │
                         └──────────┘
                              │
                              ▼
        ┌──────────────────────────┐  No
        │ Is the Control Panel Unit │──────────┐
        │ locked?                    │          │
        └──────────────────────────┘          ▼
                  │ Yes          ┌─────────────────────────────┐
                  │              │ Close the Control Panel Unit │
                  │              │ firmly.                      │
                  │              └─────────────────────────────┘
                  │◄──────────────────────┘
                  ▼
        ┌──────────────────────────┐  No
        │ Is the adjustment of the  │──────────┐
        │ Separation Rubber normal? │          │
        └──────────────────────────┘          ▼
                  │ Yes          ┌─────────────────────────────┐  No
                  │              │ Is the Separation Rubber worn│──────────┐
                  │              │ out?                         │          │
                  │              └─────────────────────────────┘          ▼
                  │                       │ Yes        ┌──────────────────────────┐
                  │                       ▼            │ Clean or adjust the       │
                  │              ┌─────────────────────────────┐│ Separation Rubber Pressure│
                  │              │ Replace the Separation Rubber.││ (Sect. 2.2.2).           │
                  │              └─────────────────────────────┘└──────────────────────────┘
                  │◄──────────────────────┘
                  ▼
        ┌──────────────────────────┐  No
        │ Is the ADF Roller clean?  │──────────┐
        └──────────────────────────┘          ▼
                  │ Yes          ┌─────────────────────────────┐
                  │              │ Clean the surface of the roller│
                  │              │ with isopropyl alcohol (Sect. 2.2.4)│
                  │              └─────────────────────────────┘
                  │◄──────────────────────┘
                  ▼
        ┌──────────────────────────┐  Yes
        │ Is the ADF Roller worn out?│─────────┐
        └──────────────────────────┘          ▼
                  │ No           ┌─────────────────────────────┐
                  │              │ Replace the ADF Roller       │
                  │              │ (Sect. 2.2.8).               │
                  │              └─────────────────────────────┘
                  │◄──────────────────────┘
                  ▼
        ┌──────────────────────────┐  No
        │ Does the ADF Roller drive │──────────┐
        │ properly?                 │          │
        └──────────────────────────┘          ▼
                  │ Yes          ┌─────────────────────────────┐  No
                  │              │ Does the ADF Roller's gear   │──────────┐
                  │              │ system function properly?    │          │
                  │              └─────────────────────────────┘          ▼
                  │                       │ Yes        ┌──────────────────────────┐
                  │                       │            │ Adjust the gear system or │
                  │                       │            │ replace defective parts.  │
                  │                       │            └──────────────────────────┘
                  │◄──────────────────────┘
                  ▼
            ┌──────────┐
            │   END    │
            └──────────┘
```

4.5.3. Document Jam (030) or Skew

Copy Mode Sample

START

Is the Control Panel Unit closed? — **No** → Close the Control Panel Unit firmly.

Yes ↓

Do all sensors on the PNL1 PCB operate normally? — **No** → Clean or replace PNL1 PCB.

Yes ↓

Does the Feed Roller have drive and sufficient friction? — **No** → Clean the surface of roller with isopropyl alcohol (Sect.2.2.4).

Yes ↓

Is the document path clear of foreign particles or paper? — **No** → Remove the foreign particles or papers from the document path.

Yes ↓

Is the Transmitting mechanism operating properly? — **No** → Adjust or replace any defective parts.

Yes ↓

END

4.6. Communications

This section explains general troubleshooting procedures for the 400 series of Information Codes. These errors are primarily caused by poor telephone line quality (loss, noise, echo, etc.). This unit is furnished with Service Mode 1 to assist in troubleshooting line quality problems.

It is suggested that both the transmitting unit and receiving unit be adjusted. This section gives relevant parameters in Service Mode 1 for the transmitting and receiving sides. If no improvement is realized after the parameters are adjusted, it is recommended that the parameters be returned to the default settings.

4.6.1. Communication Trouble

START

Perform a communication test after changing settings.

Is this an international communication?

Yes

No

Transmitting Side	Receiving Side
#021 : Off → On #025 : 1st → 2nd	#018 : 14400 bps → 12000 to 2400 bps #024 : 2100 Hz → 1080 Hz #030 : 75 ms → 1 sec #033 : 33600 bps → 31200 to 2400 bps/ TC9600/TC7200

To equalize loss (Amplitude Distortion) between the fax unit and the phone company exchange

Transmitting Side	Receiving Side
#014 : 0 dBm →4, 8, 12 dBm	#013 : 0 dBm →4, 8, 12 dBm

To improve a poor S/N (signal-to-noise ratio)

Transmitting Side	Receiving Side
#010 : -9 dBm → 0 to -15 dBm #017 : 14400 bps → 12000 to 2400 bps #032 : 33600 bps → 31200 to 2400 bps	#11 : -43 dBm → -33 dBm or -38 dBm #18 : 14400 bps → 12000 to 2400 bps #023 : Normal → Long #032 : 33600 bps → 31200 to 2400 bps

To cope with impulse noise

Receiving Side
#070 : 128 → 256 to 2048

To cope with shifted signal sequences caused by an echo

Transmitting Side	Receiving Side
#025 : 1st → 2nd	#024 : 2100 Hz → 1080 Hz #030 : 75 ms → 1 sec

4.6.2. Poor Transmitted Copy Quality

```
                    ┌───────────┐
                    │   START   │
                    └───────────┘
                          │
                          ▼
         ┌────────────────────────────┐
         │ Make a copy.               │
         └────────────────────────────┘
                          │
                          ▼
         ┌────────────────────────────┐   No
         │ Is the printed copy normal?│───────────┐
         └────────────────────────────┘           │
                  │ Yes                            ▼
                  │                    ┌──────────────────────┐   No
                  │                    │ Is the LED Array lit?│──────────┐
                  │                    └──────────────────────┘          │
                  │                         │ Yes                        ▼
                  │                         │            ┌─────────────────────────┐  No   ┌──────────────────────┐
                  │                         │            │ Does CN1, pin 1 on the  │──────▶│ Replace the LVPS.    │
                  │                         │            │ SC PCB measure          │       └──────────────────────┘
                  │                         │            │ +24 VDC?                │
                  │                         │            └─────────────────────────┘
                  │                         │                     │ Yes
                  │                         │                     ▼
                  │                         │            ┌─────────────────────────┐  No   ┌──────────────────────┐
                  │                         │            │ Does nLEDON go Low      │──────▶│ Replace the SC PCB.  │
                  │                         │            │ when the scan starts?   │       └──────────────────────┘
                  │                         │            └─────────────────────────┘
         ┌────────────────────────────┐     │                     │ Yes
         │ Perform a transmission test│     │                     ▼
         │ to a reference fax unit.   │     │            ┌─────────────────────────┐
         └────────────────────────────┘     │            │ Check CN1 on the SC     │
                  │                          │            │ PCB and the LED         │
                  │                          │            │ harness.                │
                  │                          │            └─────────────────────────┘
                  │                          │                     │
                  │                          │                     ▼
                  │                          │            ┌─────────────────────────┐
                  │                          │            │ Does the problem still  │
                  │                          │            │ occur?                  │
                  │                          │            └─────────────────────────┘
                  │                          │                     │ Yes
                  │                          │                     ▼
                  │                          │            ┌─────────────────────────┐
                  │                          │            │ Replace the LED Array.  │
                  │                          │            └─────────────────────────┘
                  │                          ▼
                  │            ┌─────────────────────────┐   No   ┌──────────────────────────┐
                  │            │ Are CN7 (SC PCB)        │───────▶│ Connect them correctly.  │
                  │            │ and CN30 (CCD PCB)      │        └──────────────────────────┘
                  │            │ connected properly?     │
                  │            └─────────────────────────┘
                  │                     │ Yes
                  │                     ▼
                  │            ┌─────────────────────────┐
                  │            │ 1. Replace the Scanner  │
                  │            │    Block.               │
                  │            │ 2. Replace the SC PCB.  │
                  │            └─────────────────────────┘
                  ▼
         ┌────────────────────────────┐   No
         │ Is the transmitted copy    │───────────┐
         │ normal?                    │           │
         └────────────────────────────┘           ▼
                  │ Yes           ┌──────────────────────────────────────┐
                  │               │ 1. Check CN18 (SC PCB)               │
                  │               │    and CN28 and 29 (MJR PCB).        │
                  │               │ 2. Check the telephone line cable.   │
                  │               │    Replace if necessary.             │
                  ▼               └──────────────────────────────────────┘
         ┌────────────────────────────┐   No
         │ Does poor transmitted copy │───────────┐
         │ appear when transmitting to│           │
         │ a specific receiver?       │           ▼
         └────────────────────────────┘   ┌──────────────────────────────┐
                  │ Yes                    │ Telephone line quality is    │
                  │                        │ poor.                        │
                  ▼                        └──────────────────────────────┘
         ┌────────────────────────────┐
         │ The receiving unit may be  │
         │ defective.                 │
         └────────────────────────────┘
                  │
                  ▼
            ┌───────────┐
            │    END    │
            └───────────┘
```

4.6.3. Dialing Problems

START

Does the unit proceed to Phase B? — Yes →
1. Set documents on the ADF correctly.
2. Check the telephone line connection.
3. The called party is busy.
4. Refer to Sect. 4.6.

No ↓

Are you using One-Touch or ABBR dialing? — Yes →
Check the registered telephone number.

No ↓

Are you using direct dialing? — Yes →
Check the dialed telephone number.

No ↓

Is the Monitor Volume too loud or too low? — Yes →
Adjust the monitor volume by pressing the "Λ" button or "V" button.

No ↓

END

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4.6.4.   Transmission Problems

```
                         ( START )
                             │
                             ▼
              ┌──────────────────────┐    No
              │ Does the ID display? │──────────────────┐
              └──────────────────────┘                  │
                         Yes                             ▼
                          │        ┌──────────────────────────────────────────┐
                          │        │ 1. No ID function at the remote unit.     │
                          │        │ 2. The ID is not set for the remote unit. │
                          │        └──────────────────────────────────────────┘
                          ◄────────────────────────────────────┘
                          │
                          ▼
              ┌──────────────────────┐    No
              │ Does the Verification│──────────────────┐
              │ Stamp operate?       │                  │
              └──────────────────────┘                  ▼
                         Yes        ┌──────────────────────────────────────────┐
                          │         │ 1. Set "STAMP=ON"                         │
                          │         │ 2. Check CN3 (SC PCB).                    │
                          │         │ 3. Replace the Stamp Solenoid.            │
                          │         │ 4. Replace the SC PCB.                    │
                          │         └──────────────────────────────────────────┘
                          ◄────────────────────────────────────┘
                          │
                          ▼
              ┌──────────────────────┐    No
              │ Is the copy quality  │──────────────────┐
              │ OK?                  │                  │
              └──────────────────────┘                  ▼
                         Yes        ┌──────────────────────────────────────────┐
                          │         │ Make a copy and refer to Sect. 4.4.16     │
                          │         └──────────────────────────────────────────┘
                          ◄────────────────────────────────────┘
                          │
                          ▼
              ┌──────────────────────┐    Yes
              │ Any other problems?  │──────────────────┐
              └──────────────────────┘                  │
                         No                              ▼
                          │         ┌──────────────────────────────────────────┐
                          │         │ See Sect. 4.3 (Troubleshooting with the   │
                          │         │ Information Codes).                       │
                          │         └──────────────────────────────────────────┘
                          ◄────────────────────────────────────┘
                          │
                          ▼
                       (  END  )
```

4.6.5. Reception Problems

START

```
Does the machine answer        No
the Ringing signal?
                 Yes
```

1. Set "RCV = AUTO"
2. Check that all covers are closed firmly.
3. Check the telephone line connection.
4. Check the Ringer Timing or DRD setting.
5. Check the recording paper path.
6. Check CN18 (SC PCB) and CN28 and 29 (MJR PCB).
7. Replace the MJR PCB.
8. Replace the SC PCB.

```
Is the received copy OK?       No
                 Yes
```

Make a copy and refer to Sect. 4.4.14.

```
Any other problems?            Yes
                 No
```

See Sect. 4.3 (Troubleshooting with the Information Codes).

END

4.6.6.   Polling Problems

```
                    ┌──────────┐
                    │  START   │
                    └────┬─────┘
                         │
           ┌─────────────▼──────────┐   No
           │  Is Polling reception OK? ├──────────────────────────────┐
           └─────────────┬──────────┘                                 │
                    Yes  │              ┌────────────────────────────────────────────────┐
                         │              │ 1. Set the same polling password as the other party │
                         │              │    is using.                                      │
                         │              │ 2. Check the password of the remote unit.         │
                         │◄─────────────└────────────────────────────────────────────────┘
                         │
           ┌─────────────▼────────────┐  No
           │ Is Polling transmission OK? ├───────────────────────────┐
           └─────────────┬────────────┘                             │
                    Yes  │            ┌─────────────────────────────────────────────────┐
                         │            │ 1. Set the polling password or no - check mode.*  │
                         │            │ 2. Check the password of the remote unit.         │
                         │◄───────────└─────────────────────────────────────────────────┘
                         │
           ┌─────────────▼──────────┐  Yes
           │   Any other problems?   ├────────────────────────────────┐
           └─────────────┬──────────┘                                 │
                     No  │            ┌──────────────────────────────────────────────────────┐
                         │            │ See Sect. 4.3 (Troubleshooting using information codes). │
                         │◄───────────└──────────────────────────────────────────────────────┘
                         │
                    ┌────▼─────┐
                    │   END    │
                    └──────────┘
```

Note:
No-check Mode means that password is not set.

4.7. Information Codes Table (For Facsimile)

			Fax Information Codes	
Code	Mode	Phase	Description of Problem	Cause
001	RCV COPY	C, D	Leading edge of the recording paper fails to reach the Timing Sensor. (1st Cassette)	Recording paper jam. Timing Sensor abnormal.
002	RCV COPY	C, D	Leading edge of the recording paper fails to reach the Timing Sensor. (2nd Cassette)	Recording paper jam. Timing Sensor abnormal.
007	RCV COPY	C, D	1. Leading edge of the recording paper fails to reach the Paper Exit Sensor. 2. Recording paper has not completely passed the Paper Exit Sensor.	Recording paper jam. Paper Exit Sensor abnormal.
010	RCV COPY	B, C	No recording paper.	No recording paper or paper is not set properly. No Paper Sensor is defective.
011	STANDBY	B, C	Paper Cassette is not installed properly.	
012	RCV	C, D	The length of the received document is over 2 meter (78.7in).	
021	STANDBY RCV COPY	B, C, D	Thermistor is abnormal. Fuser Control is abnormal. Fan is abnormal.	Defective SC PCB. Defective Fuser Unit, Power Supply Unit. Defective Fan.
030	XMT	B	Read Point Sensor does not go ON within 10 seconds after the document starts feeding.	Document is not set properly. Defective Read Point Sensor.
031	XMT COPY	C	Transmitting document was longer than 2 meter (or 78.7 in).	The document may jam. Defective Read Point Sensor.
041	STANDBY RCV COPY	B, C, D	Out of toner.	No toner. Defective Toner Sensor.
043	STANDBY RCV COPY	B, C, D	Low toner.	Toner is getting low. Defective Toner Sensor.
045	STANDBY	-	No Toner Cartridge.	Toner cartridge has not been installed. Defective Toner Sensor (Cartridge Sensor).
051	RCV COPY	-	Printer Motor abnormal.	Connector not properly connected. Defective Printer Motor. Defective SC PCB.
054	STANDBY RCV COPY	-	HSYNC abnormal. Motor abnormal.	Defective Laser Unit.
060	-	A	Printer Cover is open.	Cover is not firmly closed. Connectors are not firmly connected.
061	-	A	ADF Door is open.	Door is not firmly closed. Connectors are not firmly connected.

Fax Information Codes				
Code	Mode	Phase	Description of Problem	Cause
200	RCV	C	Decoding process is not completed at the end of phase C.	Defective SC PCB.
212	XMT RCV	A-E	Interface error occurred between the CPU and modem.	Modem is defective. (SC PCB) Software problem occurred. (SC PCB)
301	XMT RCV	-	System fault.	Software problem occurred. (SC PCB)
331	XMT	C	8-minutes timer error. (Germany only)	
390	STANDBY RCV PRINT	-	Interface error occurred between the machine and the PC.	Firmware update error. GDI print error. (Perform the operation again)
400	XMT	B	T1 timer (35±5 sec.) elapsed without detecting 300 bps signal.	Wrong number is dialed and the START button is pushed. Telephone line is disconnected while dialing. SC PCB (Modem) or MJR PCB are defective. Receiver is defective. (It may only be transmitting CED)
401	XMT	B	DCN was returned from receiver while transmitter is waiting for CFR or FTT.	Your machine's ID Number is not programmed. Possible incompatibility or incorrect Password.
402	XMT	B	DCN was returned from receiver while transmitter is waiting for NSF/DIS.	Receiver working in non-CCITT mode only. (Possible incompatibility)
403	RCV (Polling)	B	Transmitter had no polling function.	"POLLED=ON" (polling XMT ready) is not set at the transmitter. Document to be transmitted is not placed at the transmitter.
404	XMT	B	Transmitter sent NSS (or DCS) followed by TCF three times, but the receiver did not respond. (CFR or FTT is usually returned)	Receiver is defective. (Modem, MJR PCB, etc.) SC PCB or MJR PCB are defective. Receiver disconnects line during first NSS (or DCS) is transmitted.
405	XMT	B	Transmitter received FTT after it transmitted TCF at 2400bps. Received RTN after communicating at 2400 bps.	Line quality is poor. (TCF is damaged due to line noise) Receiver is defective. (Modem, etc.) SC PCB or MJR PCB are defective.
406	RCV (Password Comm.)	B	XMT-Password mismatched. RCV-Password mismatched. Selective RCV incomplete.	XMT, RCV password does not match. Last 4 digits of TSI does not match with the last 4 digits of ONE-TOUCH, ABBR telephone number.
407	XMT	D	Transmitter received no response after it transmitted post message, such as EOP, MPS, EOM, etc...or received DCN.	Receiver is defective. (No paper, paper jamming, etc.) Receiver ceased receiving because of excessive error. (Line quality is poor) SC PCB (Modem) or MJR PCB are defective.

Fax Information Codes				
Code	Mode	Phase	Description of Problem	Cause
408	XMT	D	Transmitter received RTN after it transmitted EOP, MPS, or EOM.	Receiver receives data with error. (Line quality is poor) Receiver is defective. (Modem, etc.) SC PCB or MJR PCB are defective.
409	XMT	D	Transmitter receives PIN after it transmitted a post message, such as EOP, MPS, EOM, etc.	Receiver receives data with error due to poor line quality, and receiving operator requests voice contact. Receiver is defective. (Modem, etc.) SC PCB or MJR PCB are defective.
410	RCV	D	Received DCN while waiting for post command. (EOP, MPS, EOM, etc.)	Interface or line is faulty. Transmitter is defective.
411	RCV (Polling)	B	Received DCN after transmitting NSC.	Transmitter is not ready for polling communication. Password does not match between transmitter and receiver.
412	G3 RX	B, D	No response within 12 seconds in NSS/DCS/MPS wait state. (After transmitting FTT)	Transmitter is defective. SC PCB is defective.
414	RCV (Polling)	B	No response received after transmitting 3rd NSC.	Password does not match between transmitter and receiver. Transmitter is defective. (No original, document jam, etc.)
415	XMT (Polling)	B	Remote side attempted to receive message from your machine in polling communication.	Inform the remote side that your machine does not have the polling transmission feature.
416	RCV	D	Receiver did not detect post command, such as EOP, MPS, EOM, etc.	Transmitter is defective. Line quality is poor. (RTC signal is distorted due to line noise) SC PCB or MJR PCB are defective.
417	RCV	C	Receiver returned RTN in response to post message.	Line quality is poor. (There are excessive errors in received data) SC PCB or MJR PCB are defective.
418	RCV	C	Receiver transmitted PIN in response to PRI-Q from transmitter. (Transmitting operator requests voice contact)	Line quality is poor. (There are excessive errors in received data) SC PCB or MJR PCB are defective.
420	RCV	B	T1 timer (35 sec.) elapsed without detecting 300 bps signal.	There is wrong incoming call.(non-facsimile communication) Transmitter is defective. SC PCB or MJR PCB are defective.
421	RCV	B	Busy Tone is detected after sending NSF Signal.	Remote station disconnected the line. Wrong number is dialed.
422	XMT	B	Content of NSF (or DIS) or NSC (or DTC) was invalid.	There is an incompatibility.
427	G3 RCV	B	DCN received to NSF/CSI/DIS transmitted.	The interface is incompatible.
433	XMT RCV	B, D	T.30 Protocol abnormal.	Defective remote station.

			Fax Information Codes	
Code	Mode	Phase	Description of Problem	Cause
434	XMT or RCV	B	CD (response from Modem) did not turn OFF within 180 sec. after receiver detected FLAG signal.	Remote unit is defective. SC PCB or MJR PCB are defective.
436	G3 RX	C	DCN received after transmitting FTT.	Transmitter is defective or incompatible. Line quality is poor.
456	RCV	B	Received relay transfer request or confidential document to distribute to an end receiving station or all confidential mailboxes are used.	
459	RCV	C	Failed training in Phase C.	Line quality is poor. (Training signal is distorted due to line noise) SC PCB or MJR PCB are defective.
490	RCV	C	Sum of error lines exceeded the limit (Function Parameter No. 70) of 64 lines.	Line quality is poor. SC PCB or MJR PCB are defective.
494	RCV	C	Interval between two EOLs was more than 10 sec. when receiver received message data.	Transmitter is defective. Line quality is poor. (EOL is damaged due to line noise) SC PCB or MJR PCB are defective.
495	XMT RCV	C	During reception, CD turned OFF or continued ON for long time. During communication, lost loop - current.	Line is disconnected. Transmitter is defective. SC PCB or MJR PCB are defective.
496	XMT	C	CS of modem is not able to turn ON.	SC PCB is defective.
501	XMT/ RCV(V.34)	B	Remote unit does not have compatible Modem.	
502	XMT/ RCV(V.34)	B, C, D	During reception, CD turned OFF or continued ON for long time. During communication, lost loop - current.	Line is disconnected. Transmitter is defective. SC PCB or MJR PCB are defective.
503	XMT/ RCV(V.34)	B, C, D	CS of modem is not able to turn ON during training.	SC PCB is defective. Line is disconnected.
504	XMT/V.34 (Polling)	B	Polling is rejected from the remote station.	No polling original is set.
505	XMT/V.34 (Polling)	B	Polling XMT is rejected.	No polling original is set.
540	XMT ECM	B	No response after transmitting 3rd CTC or DCN received.	Incompatible interface.
541	XMT ECM	D	No response after transmitting 3rd EOR or received DCN.	Line is faulty. MJR PCB abnormal.
542	XMT ECM	D	No response to the 3rd RR transmitted or received DCN.	Remote unit is abnormal.
543	XMT ECM	D	T5 timer (60 sec.) elapsed without MCF.	Remote unit is abnormal.
544	XMT ECM	D	Stopped Transmission after EOR Transmission.	Line is faulty. MJR PCB abnormal.
550	RCV ECM	C	Timer between frames in phase C has elapsed.	Defective remote station.
554	RCV ECM	D	Transmitted ERR after receiving EOR.	Line is faulty.

			Fax Information Codes	
Code	Mode	Phase	Description of Problem	Cause
555	RCV ECM	D	Transmitted PIN after receiving EOR.	Line is faulty and Operator Call requested by RX side.
570	RCV	B	Password or machine code did not match during remote diagnostic communication.	
571	XMT	B	Remote unit did not have the remote diagnostic function.	
580	XMT	B	Sub-address transmission to a unit that has their DIS bit 49 (NSF bit 155) OFF.	Sub-address transmission to a unit that has no Sub-address function.
581	XMT	B	Sub-address Password transmission to a unit that has their DIS bit 50 (NSF bit 156) OFF.	Sub-address transmission to a unit that has no Sub-address function.
601	XMT		ADF Door was opened during ADF transmission.	
623	XMT	A	No original was in the ADF. (Built-in dialer engaged)	Operator removed the original from the ADF after dialing was completed. Original was not set properly in the ADF.
630	XMT or RCV (Polling)	B	Redial count over.	No dial tone detected. Sensor dial tone is not detected. (destination dependent) Busy tone is detected. (destination dependent) T1 timer (35±5 sec.) elapsed without a signal from the receiver.
631	XMT	A	"STOP" button was pressed during Auto Dialing.	
634	XMT	B	Redial count over with no response or busy tone was not detected. **Note:** U.S.A. and Canadian models will redial only once if a busy tone is not detected.	Telephone line cable is disconnected. Wrong number is dialed. SC or MJR PCB is abnormal.
638	XMT		Power turned off with applicable data in memory or during communication.	Power switched off. Power failure occurred.
800	Relay Comm.		The machine was requested to relay a document but has no Relay Hub capability.	
815			Mailbox is full.	
816	Conf. Polled		"The received Polling Password did not match. The machine does not have Confidential Comm. capability."	
825	Conf. RCV Conf. Polled		Parameter settings of the initial sending station are not properly set.	
870	MEM XMT Multi-Copy		Memory overflow occurred while storing documents into memory.	
880	-	-	File Access Error.	
884	-	-	File Access Error.	

4.8. Diagnostic Codes (For Facsimile)

The 13-digit Diagnostic Code is provided for the service engineer to analyze how the communication was performed. The code is recorded on the Journal.

Journal Example

```
*************  -JOURNAL-  *************************  DATE NOV-12-2001  *****  TIME 09:39********

NO.  COMM.  PAGES   FILE  DURATION  X/R   IDENTIFICATION    DATE     TIME    DIAGNOSTIC

01   OK     001     129   00:00'42  XMT   123 456 789      NOV-12   01:55   C8649003C0000
                                                                            ↑             ↑
                                                                        1st digit      13th digit


 _    _    _    _    _    _    _    _    _    _    _    _    _    _    _    _    _    _    _    _

                                                    - PANASONIC PANAFAX UF-790

********************************** -  PANAFAX UF-790 -  ******  -12345678901234567890-  *******
```

1st Digit: Manufacturer Code
 -: Not used/defined

Fax Diagnostic Codes				
	Definition			
Data	Manufacturer Code			
0	-			
1	Casio			
2	Canon			
3	Sanyo			
4	Sharp			
5	Tamura			
6	Toshiba			
7	NEC			
8	Oki			
9	Hitachi			
A	Xerox			
B	Fujitsu			
C	Matsushita			
D	Mitsubishi			
E	Murata			
F	Ricoh			

2nd Digit
-: Not used/defined

Data	Fax Diagnostic Codes
	Definition
	ID (TSI, CSI, CIG)	RTN	DCN	STOP Button
0	-	-	-	-
1	Received	-	-	-
2	-	Received	-	-
3	Received	Received	-	-
4	-	-	Received	-
5	Received	-	Received	-
6	-	Received	Received	-
7	Received	Received	Received	-
8	-	-	-	Pressed
9	Received	-	-	Pressed
A	-	Received	-	Pressed
B	Received	Received	-	Pressed
C	-	-	Received	Pressed
D	Received	-	Received	Pressed
E	-	Received	Received	Pressed
F	Received	Received	Received	Pressed

3rd Digit
-: Not used/defined

Data	Fax Diagnostic Codes
	Definition
	Resolution (dpi)	Paper Width		
0	-	A4		
1	S-Fine	A4		
2	400 x 400	A4		
3	300 x 300	A4		
4	-	-		
5	-	-		
6	-	-		
7	-	-		
8	-	-		
9	-	-		
A	-	-		
B	-	-		
C	-	-		
D	-	-		
E	-	-		
F	-	-		

4th Digit
  -: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Scanning Rate	**Resolution**		
0	20 ms/line	Std		
1	5 ms/line	Std		
2	10 ms/line	Std		
3	-	Std		
4	40 ms/line	Std		
5	-	Std		
6	-	Std		
7	0 ms/line	Std		
8	20 ms/line	Fine		
9	5 ms/line	Fine		
A	10 ms/line	Fine		
B	-	Fine		
C	40 ms/line	Fine		
D	-	Fine		
E	-	Fine		
F	0 ms/line	Fine		

5th Digit
  -: Not used/defined

Fax Diagnostic Codes				
Data	**Definition**			
	Deferred Comm.	**Dialing/RCV**	**Memory/ Non-Memory**	
0	-	Manual Communication	Non-Memory	
1	Used	Manual Communication	Non-Memory	
2	-	Auto Dialing	Non-Memory	
3	Used	Auto Dialing	Non-Memory	
4	-	Auto RCV	Non-Memory	
5	Used	Auto RCV	Non-Memory	
6	-	Remote RCV	Non-Memory	
7	Used	Remote RCV	Non-Memory	
8	-	Manual Communication	Memory	
9	Used	Manual Communication	Memory	
A	-	Auto Dialing	Memory	
B	Used	Auto Dialing	Memory	
C	-	Auto RCV	Memory	
D	Used	Auto RCV	Memory	
E	-	Remote RCV	Memory	
F	Used	Remote RCV	Memory	

6th Digit
   -: Not used/defined

Fax Diagnostic Codes				
	Definition			
Data	**Polling**	**XMT/RCV**	**Selective Comm.**	**Password Comm.**
0	-	RCV	Off	Off
1	Yes	RCV	Off	Off
2	-	XMT	Off	Off
3	Yes	XMT	Off	Off
4	-	RCV	On	Off
5	Yes	RCV	On	Off
6	-	XMT	On	Off
7	Yes	XMT	On	Off
8	-	RCV	Off	On
9	Yes	RCV	Off	On
A	-	XMT	Off	On
B	Yes	XMT	Off	On
C	-	RCV	On	On
D	Yes	RCV	On	On
E	-	XMT	On	On
F	Yes	XMT	On	On

7th Digit
   -: Not used/defined

Fax Diagnostic Codes				
	Definition			
Data	**Sub-Address Comm.**	**Confidential Comm.**	**Relayed Comm.**	**Turnaround Polling**
0	-	-	-	-
1	Yes	-	-	-
2	-	Yes	-	-
3	Yes	Yes	-	-
4	-	-	Yes	-
5	Yes	-	Yes	-
6	-	Yes	Yes	-
7	Yes	Yes	Yes	-
8	-	-	-	Yes
9	Yes	-	-	Yes
A	-	Yes	-	Yes
B	Yes	Yes	-	Yes
C	-	-	Yes	Yes
D	Yes	-	Yes	Yes
E	-	Yes	Yes	Yes
F	Yes	Yes	Yes	Yes

8th Digit
   -: Not used/defined

Fax Diagnostic Codes				
	Definition			
Data	Advanced Comm.	Cover Sheet XMT		
0	-	-		
1	Report XMT	-		
2	Check & Call	-		
3	-	-		
4	Memory Transfer	-		
5	-	-		
6	-	-		
7	-	-		
8	-	Yes		
9	Report XMT	Yes		
A	Check & Call	Yes		
B	-	Yes		
C	Memory Transfer	Yes		
D	-	Yes		
E	-	Yes		
F	-	Yes		

9th Digit
   -: Not used/defined

Fax Diagnostic Codes				
	Definition			
Data	Short Protocol	Standard/ Non-Standard		
0	-	Standard		
1	-	Standard		
2	-	Standard		
3	-	Standard		
4	-	Standard		
5	-	Standard		
6	-	Standard		
7	-	Standard		
8	-	Non-Standard		
9	B	Non-Standard		
A	-	Non-Standard		
B	D	Non-Standard		
C	-	Non-Standard		
D	-	Non-Standard		
E	-	Non-Standard		
F	-	Non-Standard		

10th Digit
    -: Not used/defined

Fax Diagnostic Codes				
Data	Definition			
	Coding	ECM		
0	MH	-		
1	MR	-		
2	MMR	-		
3	-	-		
4	-	-		
5	-	-		
6	-	-		
7	-	-		
8	MH	Yes		
9	MR	Yes		
A	MMR	Yes		
B	-	-		
C	-	-		
D	-	-		
E	-	-		
F	-	-		

11th Digit
    -: Not used/defined

Fax Diagnostic Codes				
Data	Definition			
	Symbol Rate (V.34)	V.34		
0	-	-		
1	-	-		
2	-	-		
3	-	-		
4	-	-		
5	-	-		
6	-	-		
7	-	-		
8	2400 sr	Yes		
9	-	-		
A	2800 sr	Yes		
B	3000 sr	Yes		
C	3200 sr	Yes		
D	3429 sr	Yes		
E	-	-		
F	-	-		

12th Digit
   -: Not used/defined

<table>
<tr><td colspan="5" align="center">Fax Diagnostic Codes</td></tr>
<tr><td rowspan="2">Data</td><td colspan="4" align="center">Definition</td></tr>
<tr><td>Modem Speed</td><td>Modem Speed (V.34)</td><td></td><td></td></tr>
<tr><td>0</td><td>2400 bps</td><td>-</td><td></td><td></td></tr>
<tr><td>1</td><td>4800 bps</td><td>2400 bps</td><td></td><td></td></tr>
<tr><td>2</td><td>7200 bps</td><td>4800 bps</td><td></td><td></td></tr>
<tr><td>3</td><td>9600 bps</td><td>7200 bps</td><td></td><td></td></tr>
<tr><td>4</td><td>TC 7200 bps</td><td>9600 bps</td><td></td><td></td></tr>
<tr><td>5</td><td>TC 9600 bps</td><td>12000 bps</td><td></td><td></td></tr>
<tr><td>6</td><td>12000 bps</td><td>14400 bps</td><td></td><td></td></tr>
<tr><td>7</td><td>14400 bps</td><td>16800 bps</td><td></td><td></td></tr>
<tr><td>8</td><td>-</td><td>19200 bps</td><td></td><td></td></tr>
<tr><td>9</td><td>-</td><td>21600 bps</td><td></td><td></td></tr>
<tr><td>A</td><td>-</td><td>24000 bps</td><td></td><td></td></tr>
<tr><td>B</td><td>-</td><td>26400 bps</td><td></td><td></td></tr>
<tr><td>C</td><td>-</td><td>28800 bps</td><td></td><td></td></tr>
<tr><td>D</td><td>-</td><td>31200 bps</td><td></td><td></td></tr>
<tr><td>E</td><td>-</td><td>33600 bps</td><td></td><td></td></tr>
<tr><td>F</td><td>-</td><td>-</td><td></td><td></td></tr>
</table>

13th Digit
   -: Not used/defined

<table>
<tr><td colspan="5" align="center">Fax Diagnostic Codes</td></tr>
<tr><td rowspan="2">Data</td><td colspan="4" align="center">Definition</td></tr>
<tr><td>Line Status</td><td></td><td></td><td></td></tr>
<tr><td>0</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>1</td><td>Private Line</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>3</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>5</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>6</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>7</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>8</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>9</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>A</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>B</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>C</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>D</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>E</td><td>-</td><td></td><td></td><td></td></tr>
<tr><td>F</td><td>-</td><td></td><td></td><td></td></tr>
</table>

5 Service Modes

5.1. Service Modes (For Facsimile)

5.1.1. Service Mode Table

The following service modes are provided to assist you in setting operational functions of the unit and determining the condition of the unit.

No.	Service Mode	Description
1	Function Parameter Setting	Allows changes to the function parameters (the home position, etc.).
2	RAM Edit Mode	Factory use only.
3	Print Parameter List / Reports	Prints the Function Parameter List, Page Memory Test, Printer Report, All Document File, Protocol Trace, Toner Order Form and Drum Unit Order Form.
4	Modem Tests	Generates various binary, tonal and DTMF signals, by the modem.
5	Diagnostic	Performs various hardware tests.
6	RAM Initialization	Initialize RAM and restore the default value of the function parameters.
7	LBP Service Mode	Changes the Printer Parameters.
8	Check & Call	Allows input of information for Service Alert Report, Maintenance Alert Report, Toner Order Form and Drum Unit Order Form.
9	System Maintenance	Used for Firmware Update and Sending a Received File during a fatal printer error.

5.1.2.   Service Mode 1 (Function Parameter Setting)

Use the following procedure to change the function parameters.

Service Mode 1		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	`NOV-12-2001  15:00` `                00%`
2	Press "FUNCTION" and then "7".	`SET MODE        (1-6)` `ENTER NO. OR ∨∧`
3	Press "MONITOR" four times, then press "*".	`SERVICE MODE` `ENTER NO. OR ∨∧`
4	Press "1".	`PARAMETER (000-199)` `ENTER PARAMETER #_`
5	Enter the Function Parameter Number. Ex: Changing the "ALARM STATUS" -- Enter "001" and press [SET].	`PARAMETER #001` `ALARM STATUS?`
6	Press "START".	`ALARM STATUS:Timer` `1:OFF 2:Tmr 3:CONST`
7	Enter the new setting value. Ex: Enter "3" for Constant.	`ALARM STATUS:Const.` `1:OFF 2:Tmr 3:CONST`
8	Press "START". The new value will be stored and the next parameter will be displayed.	`PARAMETER #002` `STOP COMM.JRNL?`
9	Repeat steps 4 through 7 to change other Function Parameters or Press "STOP" twice to return to standby.	`NOV-12-2001  15:00` `                00%`

Note:
   The following buttons provide these functions in the Service Mode:

"START"   :   The new setting value is stored in the machine.
"∨"   :   Scroll the function parameter number down.
"∧"   :   Scroll the function parameter number up.

Function Parameter Table

No.	Parameter	Selections	Function
000	MON/TEL DIAL	1 = Monitor 2 = TEL/DIAL	Selects whether the machine starts to TX automatically during On-Hook dialing. **Monitor** : Start to TX after pressing START **TEL/DIAL** : Start to TX automatically
001	ALARM STATUS	1 = OFF 2 = Timer (6 sec.) 3 = Constant	Selects the No Paper or No Toner alarm status. **OFF** : Alarm is disabled. **Timer** : Alarm will shut off after 6 seconds. **Constant** : Alarm will not stop until "STOP" is pressed or the error is cleared/corrected.
002	STOP COMM. JRNL	1 = Off 2 = On	Selects whether the machine prompts to print the COMM. Journal when the printout condition is set to INC and STOP is pressed during communication.
003	CONTINUOUS POLL	1 = Off 2 = Stn (Tx only)	Selects whether the Continuous Polling feature is enabled. **Stn:** Place the document(s) on the ADF then press the Program Key [P4] to store or add the document(s) into a polled file. (See Note 4)
004	NUMERIC ID SET	1 = Off (will not accept) 2 = On (accepts)	Selects whether the machine accepts and allows to set or change the Numeric ID.
005	Not Used		
006	ID DISPLAY	1 = Number (Numeric ID) 2 = Chara (Character ID)	Selects the priority of displaying the ID.
007	JNL COLUMN	1 = Preset station name 2 = Received ID	Selects the contents of the ID to display on the Journal.
008	MONITOR	1 = Off 2 = On	Selects whether the Monitor is ON/OFF for monitoring fax signals. **(FOR SERVICE USE ONLY)**
009	DC LOOP	1 = Off (Normal) 2 = On (Off Hook)	Selects a false Off Hook state for back to back communication test.
010	TX LEVEL	00 = 0 dBm ~ 15 = -15 dBm	Selects the TX signal output level, 0 to -15 dBm in 1 dBm steps. (Refer to Chapter 4.3.)
011	RX LEVEL	1 = -43 dBm 2 = -38 dBm 3 = -33 dBm 4 = -48 dBm	Selects the receiving sensitivity of -33/-38/-43/-48 dBm.
012	DTMF LEVEL	00 = 0 dBm ~ 15 = -15 dBm	Selects the DTMF output level, 0 to -15 dBm in 1 dBm steps.
013	G3 RX EQL	1 = 0 dB 2 = 4 dB 3 = 8 dB 4 = 12 dB	Selects the cable equalizer for G3 reception mode, 0dB, 4dB, 8dB or 12dB.
014	G3 TX EQL	1 = 0 dB 2 = 4 dB 3 = 8 dB 4 = 12 dB	Selects the cable equalizer for G3 transmission mode, 0dB, 4dB, 8dB or 12dB.

		Function Parameter Table		
No.	Parameter	Selections	Function	
015 ~ 016	Not Used			
017	TX START	1 = 2400 bps 2 = 4800 bps 3 = 7200 bps 4 = 9600 bps 5 = TC7200 bps 6 = TC9600 bps 7 = 12000 bps 8 = 14400 bps	Selects the transmission modem start speed, 14400/12000/TC9600/TC7200/9600/7200/4800/2400 bps. **Note:** This parameter is applicable only when communicating with regular G3 machines. When communicating with Super G3 (V.34) machines, use Parameter No. 32.	
018	RX START	1 = 2400 bps 2 = 4800 bps 3 = 7200 bps 4 = 9600 bps 5 = TC7200 bps 6 = TC9600 bps 7 = 12000 bps 8 = 14400 bps	Selects the reception modem start speed, 14400/12000/TC9600/TC7200/9600/7200/4800/2400 bps. **Note:** This parameter is applicable only when communicating with regular G3 machines. When communicating with Super G3 (V.34) machines, use Parameter No. 33.	
019	ITU-T V.34	1 = Off 2 = On 3 = Select	Selects whether the ITU-T V.34 is Off, On or Select. **Select**: Select whether the ITU-T V.34 is Off or On, when entering Phone Book Dialing Numbers or Manual Number Dialing.	
020	ITU-T ECM	1 = Off (Invalid) 2 = On (Valid)	Select the ECM mode.	
021	EP TONE	1 = Off (without EP Tone) 2 = On (with EP Tone)	Selects whether to add the echo protect tone on V.29 mode. (Used when Echo Suppression is disabled.) **On** : Add **Off** : Do not add	
022	SIGNAL INTERVAL	1 = 100 ms 2 = 200 ms 3 = 500 ms	Selects the time interval between the receiving signal and the transmitting signal.	
023	TCF CHECK	1 = Normal (Short) 2 = Long	Selects the TCF check interval Long/Short	
024	CED FREQUENCY	1 = 1080 Hz (non ITU-T) 2 = 2100 Hz	Selects the CED frequency 2100/1080 Hz	
025	COMM. START-UP	1 = 1'st response 2 = 2'nd response	Selects the communication start-up condition (XMT and Polling). (Used when Echo Suppression is disabled.)	
026	NON-STANDARD	1 = Off (Invalid) 2 = On (Valid)	Selects own mode (Panafax mode).	
027	SHORT PROTOCOL B	1 = Off (Invalid) 2 = On (Valid)	Selects the short protocol mode.	
028	SHORT PROTOCOL D	1 = Off (Invalid) 2 = On (Valid)	Selects the short protocol mode. When activated, it allows the machine to automatically store the modem speed for each Auto Dial Number.	
029	REMOTE DIAGNOSTICS	1 = Off (will not accept) 2 = On (accepts)	Selects whether the machine accepts Remote Diagnostics from the service station.	

		Function Parameter Table		
No.	Parameter	Selections	Function	
030	CED & 300 bps	1 = 75 ms 2 = 1 sec	Selects the pause interval between the CED and the 300 bps signal. (Used when Echo Suppression is disabled.)	
031	RTC = EOLx12	1 = Off (EOLx6) 2 = On (EOLx12)	Selects the RTC signal, EOLx6 or EOLx12.	
032	V34 TX START	2400-33600bps	Selects the transmission modem start speed for V.34 communication, 33600-2400 bps.	
033	V34 RX START	2400-33600bps	Selects the receiving modem start speed for V.34 communication, 33600-2400 bps.	
034	V34 TX Symbol Rate	2400-3429sr	Selects the transmission symbol rate for V.34, 3429/3200/3000/2800/2400 sr. Press "V" or "Λ " to select the symbol rate.	
035	V34 RX Symbol Rate	2400-3429sr	Selects receiving symbol rate for V.34, 3429/3429/3200/3000/2800/2400 sr. Press "V" or "Λ " to select the symbol rate.	
036	Not Used			
037	PROTOCOL DISPLAY	1 = Off (not displayed) 2 = On (displayed)	Selects whether to display the modem speed during communication. Press "V" or "Λ " to display.	
038	Not Used			
039	FLASH TIME	5 = 50 ms ~ 100 = 1000 ms	Selects the pause interval before activating the Flash key.	
040	E/F TIME (Except for USA and Canada)	5 = 50 ms ~ 100 = 1000 ms	Selects the pause interval before activating the Flash key.	
041	PAUSE TIME	1 = 1 sec. ~ 10 = 10 sec.	Selects the pause interval from 1 sec. ~ 10 sec. for dialing through a switchboard or for international calls.	
042	Not Used			
043	REDIAL INTERVAL	0 = no waiting ~ 15 = 15 minutes	Selects the redial interval from 0 to 15 minutes in 1 minute steps.	
044	REDIAL COUNT	0 = no redial ~ 15 = 15 times	Selects the redial count from 0 to 15 times in 1 step intervals. **Note:** In order to comply with the requirements TBR21 in the EC destinations, do not select 15 times.	
045	RING DETECT COUNT	1 = 1 ring ~ 9 = 9 rings	Selects the ring detection count from 1 to 9 rings in 1 ring step intervals.	
046	ON-HOOK TIME	0 = 0 sec. ~ 90 = 90 sec.	Selects the on-hook time between sequential communication calls in 1 second step intervals.	
047	RESPONSE WAIT	1 = 1 sec. ~ 90 = 90 sec.	Selects the waiting interval for the response after completing the dialing.	
048 049	Not Used			

No.	Parameter	Selections	Function
Function Parameter Table			
050	RING DETECT MODE	1 = Normal 2 = Rough	Selects the quality of ringer detection. Use if the line signal is out of regulation, set to "Rough" so that the unit may detect the ringing signals.
051	Not Used		
052	PULSE RATE	1 = 10 pps 2 = 20 pps	Selects the dial pulse rate 10/20 pps.
053 054	Not Used		
055	BUSY TONE CHECK	1 = Off 2 = On	Selects whether to detect the Busy Tone.
056	DIAL TONE CHECK (Except for USA and Canada)	1 = Off 2 = On	Selects whether to detect dial tone before dialing the telephone number.
057	DC LOOP CHECK (Except for USA and Canada)	1 = Off (will not check) 2 = On (checks)	Selects whether the unit checks the DC Loop during communication.
058	COMM.JRNL +IMAGE	1 = Off (without image) 2 = On (with image)	Selects whether the machine prints the COMM. Journal with image.
059	CONF. RCV REPORT ON	1 = Off 2 = On	
060	VERSION	Indicates the Host software version.	
061	TX/RX/PRT/CPY COUNTER	TX/RX/PRT/CPY	Displays the transmitted, received, total printed and copied document count.
062	PRINT COUNTER	1 = Off 2 = On	Selects whether to print in the Fax Parameter List, the counter information that is displayed in the Function Parameter No. 61.
063	Not Used		
064	SILENT DETECTION TIME OUT	01 = 1 sec. ~ 60 = 60 sec.	Select silent detection timeout time (TAM I/F).
065	SILENT INTEGRATION TIME	01 = 1 sec. ~ 10 = 10 sec.	Select ring detection integration time (TAM I/F).
066	RING COUNT (TAM)	01 = 1 sec. ~ 99 = 99 sec.	Select ring detection count 1 to 99 times in one step intervals on TAM I/F mode.
067	Not Used		
068	NYSE FAX FORWARD (For USA and Canada only)	1 = Off 2 = On	Selects whether the machine will forward the incoming and outgoing faxes to a specified station. **Note:** Once this parameter is activated, Fax Forwarding via Fax Parameter 054 is automatically disabled.
069	NYSE LOCAL PRINT	1 = INC 2 = ON (Always)	Selects the printing condition for the incoming faxes after FAX Forwarding. **INC.** : Prints only if FAX Forwarding fails. **ON** : Always prints.

Function Parameter Table

No.	Parameter	Selections	Function

070	LINE ERROR	1 = 128 lines
		2 = 256 lines
		3 = 512 lines
		4 = 1024 lines
		5 = 2048 lines
		6 = Off
		  (will not disconnect line)
			1. Selects the line disconnect condition during reception. If the number of line errors exceed this setting, the unit will disconnect the line.
			2. Selects the transmit condition of RTP/PIP or RTN/PIN.
			  (Available if No.73 Error Detect is set to "LINES")
			  (See Note 1)

071	TOTAL ERROR	1 = 5% 2 = 10% 3 = 15% 4 = 20%	Selects the transmit condition of RTP/PIP or RTN/PIN. (Available if No.73 Error Detect is set to "RATE".) (See Note 2)
072	CONTINUOUS ERROR	1 = Off (unlimited) 2 = 3 lines/STD 3 = 6 lines/STD 4 = 12 lines/STD	Selects the continuous total error criteria of Off/3/6 or 12 lines in Standard mode. If continuous total error exceeds this setting, the unit will transmit RTN/PIN. (Available if No.73 Error Detect is set to "RATE".)
073	ERROR DETECT	1 = Lines 2 = Rate	Selects the error detect condition Lines/Rate.
074	RTN RECEIVE	1 = Disconnect 2 = Continue	Selects whether to disconnect the phone line or continue when "RTN" is received.
075	CODING	1 = MH (MH only) 2 = MR (MH or MR) 3 = MMR (MH or MR or MMR)	Selects the coding scheme.
076	Not Used		
077	RX JAM LENGTH	1 = Off (unlimited) 2 = 2 m 3 = 8 m	Selects the maximum length of a received document that can be printed.
078 079	Not Used		
080	DOC. TOP FEED	-5.0 mm ~ +5.0 mm	Adjusts the distance between the scanning sensor ON position and the scanning start position.
081	DOC. END FEED	-5.0 mm ~ +5.0 mm	Adjusts the distance between the scanning sensor OFF position and the scanning end position.
082	JAM LENGTH	1 = 1 m 2 = 2 m 3 = 8 m 4 = Unlimited	Selects the maximum length of the original that can be scanned.
083	Not Used		
084	LINE AS NO PAPER	1 = Ring (ring) 2 = Busy (keep line busy)	Selects whether to ring or send a busy tone to the remote station when the recording paper runs out or the unit cannot receive because of any trouble.
085	Not Used		
086	REDUCTION FINE	1 = Off 2 = On	Selects whether the resolution is preset to Fine, when sending with reduction B4→A4. (For B4 Scanning Model only)
087	DARKER LEVEL	0 = Lightest Contrast ~ 15 = Darkest Contrast	Selects the contrast level. 0← →15 Lightest← →Darkest
088	NORMAL LEVEL		
089	LIGHTER LEVEL		

Function Parameter Table

No.	Parameter	Selections	Function
090	PRINT DENSITY	1 = Normal 2 = Darker	Print Density sometimes gets light at low Humidity condition. In this case, selects "2:Darker". (Except for U.S.A. and Canada)
091	Not Used		
092	SMOOTHING	1 = Off 2 = On	Selects whether the smoothing function is available.
093 ~ 129	Not Used		
130	BUSY-ACK TIMING	• In Busy • After Busy • While Busy	Selects the signal timing between the BUSY and ACK signal in Printer Interface Mode.
131	CMD RCV GRD TIMER	1 min. ~ 15 min.	Selects the Guard Timer between each GDI Command in Printer Interface Mode.
132	PRT DATA TIMER	1 min. ~ 15 min.	Selects the Guard Timer between each GDI Data Frame in Printer Interface Mode.
133	COLLATION (PRT)	1 = Off 2 = On 3 = Auto	Selects the Print Collation in Printer Interface Mode. When "Auto" is selected, print collation will operate according to the setting in Fax Parameter #65.
134	COLLATION (PC I/F)	1 = Off 2 = On 3 = Auto	Selects the Print Collation in PC Interface Mode. When "Auto" is selected, print collation will operate according to the setting in Fax Parameter #65.
135 ~ 199	Not Used		

Note 1: Function Parameter No. 070 (Line Error)-Transmit condition of RTP/PIP or RTN/PIN

Signal	Setting					
	1:128	2:256	3:512	4:1024	5:2048	6:Off
MCF/PIP	0-31	0-63	0-127	0-255	0-511	Always
RTP/PIP	32-63	64-127	128-255	256-511	512-1023	-
RTN/PIN	64-127	128-255	256-511	512-1023	1024-2047	-

Note 2: Function Parameter No. 071 (Total Error)-Transmit condition of RTP/PIP or RTN/PIN

Signal	Setting			
	1:5%	2:10%	3:15%	4:20%
MCF/PIP	0-2	0-4	0-7	0-9
RTP/PIP	3-4	5-9	8-14	10-19
RTN/PIN	5-	10-	15-	20-

Note 3: The default setting of parameters depends on the destination's specifications or regulations. Print the Function Parameter List to confirm the default settings.

Note 4:

Continuous Polling (Station Mode)
This feature allows you to store or add documents into a polled file in memory.

To enable the Continuous Polling feature set Function Parameter No. 003 to "2:Station". The Program Key [P4] will be assigned with the "Store-4-Polling" name automatically and cannot be changed.

To prepare the document(s) to be polled, simply place the document(s) on the ADF and then press the Program Key [P4] to store or add the document(s) into a polled file.

 (Note: If a regular polled file ([FUNCTION][3][2]) is stored in memory, the Program Key [P4] for Continuous Polling will not be accepted.)

5.1.3. Service Mode 3 (Printout of Lists, Reports and Test Results)

From this Service Mode you can print the Function Parameter List, Page Memory Test, Printer Report, All Document File, Protocol Trace and the Toner Order Form.

5.1.3.1. Function Parameter List

A list of all Function Parameters can be printed by the following procedure.

Service Mode 3 - Function Parameter List		
Step	Operation or Unit Condition	LCD Display
1	Standby	`NOV-12-2001  15:00` `                00%`
2	Press "FUNCTION" and then "7".	`SET MODE        (1-6)` `ENTER NO. OR ∨∧`
3	Press "MONITOR" four times, then press "*".	`SERVICE MODE` `ENTER NO. OR ∨∧`
4	Press "3".	`PRINTOUT (1-7)` `1:FUNC. PARAM. LIST`
5	Press "START".	`* PRINTING *` `FUNC. PARAMETER LIST`
6	After printing is completed, the unit returns to the display in step 3.	`SERVICE MODE` `ENTER NO. OR ∨∧`
7	Press "STOP" to return to standby.	`NOV-12-2001  15:00` `                00%`

Function Parameter List (Sample)

```
************** -FUNCTION PARAMETER- ************** DATE NOV-12-2001 ***** TIME 12:07 *** P.01

000 MON/TEL DIAL:[Monitor] Monitor        050 RING DET MODE:[Normal] Normal
001 ALARM STATUS:[Timer] Timer            051 ----------
002 STOP COMM.JRNL:[On] On                052 PULSE RATE:[10pps] 10pps
003 CONTINUOUS POLL:[Off] Off             053 ----------
004 NUMERIC ID SET:[On] On                054 ----------
005 ---------                             055 BUSY TONE CHECK:[On] On
006 ID DISPLAY:[Chara] Chara              056 ----------
007 JNL COLUMN:[Station] Station          057 ----------
008 MONITOR:[Off] Off                     058 COMM. JRNL +IMAGE:[Off] Off
009 DC LOOP:[Off] Off                     059 CONF.RCV REPORT:[On] On

010 TX LEVEL:[-9dBm] -9dBm                060 VERSION:   UF-790 AAV10000AU
011 RX LEVEL:[-43dBm] -43dBm              061 TX/RX/PRT/CPY:000050/000058/000074/000001
012 DTMF LEVEL:[-5dBm] -5dBm              062 PRINT COUNTER:[Off] Off
013 G3 RX EQL:[Off] Off                   063 ----------
014 G3 TX EQL:[Off] Off                   064 SILENT DET.T.OUT:[60] 60
015 ---------                             065 SILENT INT. TIME:[5sec] 5sec
016 ---------                             066 RING COUNT(TAM):[5] 5
017 TX START:[14400bps ] 14400bps         067 ----------
018 RX START:[14400bps ] 14400bps         068 NYSE FAX FORWARD:[Off] Off
019 ITU-T V34:[On] On                     069 NYSE LOCAL PRINT:[Inc] Inc

020 ITU-T ECM:[On] On                     070 LINE ERROR:[128] 128
021 EP TONE:[Off] Off                     071 TOTAL ERROR:[ 10] 10
022 SIG. INTERVAL:[500ms] 500ms           072 CONTI. ERROR:[Off] Off
023 TCF CHECK:[Normal] Normal             073 ERROR DETECT:[Rate] Rate
024 CED FREQ.:[2100Hz] 2100Hz             074 RTN RECEIVE:[Discon] Discon
025 COMM. START-UP:[1'st] 1'st            075 MH/MR/MMR:[MMR] MMR
026 NON-STANDARD:[On] On                  076 ----------
027 SHORT PROTOCOL B:[On] On              077 RX JAM LENGTH:[Off] Off
028 SHORT PROTOCOL D:[On] On              078 ----------
029 REMOTE DIAG.:[On] On                  079 ----------

030 CED & 300bps:[75ms] 75ms              080 ----------
031 RTC=EQL x 12:[Off] Off                081 DOC END FEED:[0.0mm] 0.0mm
032 V34 TX START:[33600bps] 33600bps      082 JAM LENGTH:[ 2 m]  2 m
033 V34 RX START:[33600bps] 33600bps      083 ----------
034 V34 TX SR:[3429sr] 3429sr             084 LINE AS NOPAPER:[Ring] Ring
035 V34 RX SR:[3429sr] 3429sr             085 ----------
036 ---------                             086 ----------
037 PROTOCOL DISPLAY:[Off] Off            087 DARKER LEVEL:[4] 4
038 ---------                             088 NORMAL LEVEL:[8] 8
039 FLASH TIME:[50] 500ms                 089 LIGHTER LEVEL:[12] 12

040 ---------                             090 ----------
041 PAUSE TIME:[3] 3 sec                  091 ----------
042 ---------                             092 SMOOTHING:[On] On
043 REDIAL INTERVAL:[3] 3 min             093 ----------
044 REDIAL COUNT:[5] 5                    094 ----------
045 RING DET. COUNT:[2] 2                 095 ----------
046 ON-HOOK TIME:[5] 5 sec                096 ----------
047 RESPONSE WAIT:[60] 60 sec             097 ----------
048 ---------                             098 ----------
049 ---------                             099 ----------

      Note:The power must be reset for the new parameter settings to take effect.

                                                            - PANASONIC -

***************************** - PANAFAX UF-790 - ****** - 12345678901234567890 -*********
```

Function Parameter List (Sample)

```
************ -FUNCTION PARAMETER- ************ DATE NOV-12-2001 ***** TIME 12:07 ***P.02

100 ----------                          150 ----------
101 ----------                          151 ----------
102 ----------                          152 ----------
103 ----------                          153 ----------
104 ----------                          154 ----------
105 ----------                          155 ----------
106 ----------                          156 ----------
107 ----------                          157 ----------
108 ----------                          158 ----------
109 ----------                          159 ----------

110 ----------                          160 ----------
111 ----------                          161 ----------
112 ----------                          162 ----------
113 ----------                          163 ----------
114 ----------                          164 ----------
115 ----------                          165 ----------
116 ----------                          166 ----------
117 ----------                          167 ----------
118 ----------                          168 ----------
119 ----------                          169 ----------

120 ----------                          170 ----------
121 ----------                          171 ----------
122 ----------                          172 ----------
123 ----------                          173 ----------
124 ----------                          174 ----------
125 ----------                          175 ----------
126 ----------                          176 ----------
127 ----------                          177 ----------
128 ----------                          178 ----------
129 ----------                          179 ----------

130 BUSY-ACK TIMING:[In Busy] In Busy    180 ----------
131 CMD RCV GRD TIMER:[3min] 3min        181 ----------
132 PRT DATA TIMER:[3min] 3min           182 ----------
133 COLLATION(PRT):[Off] Off             183 ----------
134 COLLATION (PC):[Auto] Auto           184 ----------
135 ----------                          185 ----------
136 ----------                          186 ----------
137 ----------                          187 ----------
138 ----------                          188 ----------
139 ----------                          189 ----------

140 ----------                          190 ----------
141 ----------                          191 ----------
142 ----------                          192 ----------
143 ----------                          193 ----------
144 ----------                          194 ----------
145 ----------                          195 ----------
146 ----------                          196 ----------
147 ----------                          197 ----------
148 ----------                          198 ----------
149 ----------                          199 ----------

        Note:The power must be reset for the new parameter settings to take effect.

                                                      -PANASONIC -

***************************** -PANAFAX UF-790- ****** -12345678901234567890- **********
```

Note:
1. [ ] - Factory Default
2. The contents of the Function Parameter List may vary depending on the destination's regulations.
3. " * " mark will be shown on the left side of number when setting was changed from default.

5.1.3.2. Page Memory Test

A test pattern prints out for checking the page memory and the printer mechanism using the following procedure.

Service Mode 3 - Page Memory Test		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	NOV-12-2001 15:00 00%
2	Press "FUNCTION" and then "7".	SET MODE (1-6) ENTER NO. OR ∨∧
3	Press "MONITOR" four times, then press "*".	SERVICE MODE ENTER NO. OR ∨∧
4	Press "3".	PRINTOUT (1-7) 1:FUNC. PARAM. LIST
5	Press "3" and "START".	* PRINTING * PAGE MEMORY TEST
6	After printing is completed, the unit returns to the display in step 3.	SERVICE MODE ENTER NO. OR ∨∧
7	Press "STOP" to return to standby.	NOV-12-2001 15:00 00%
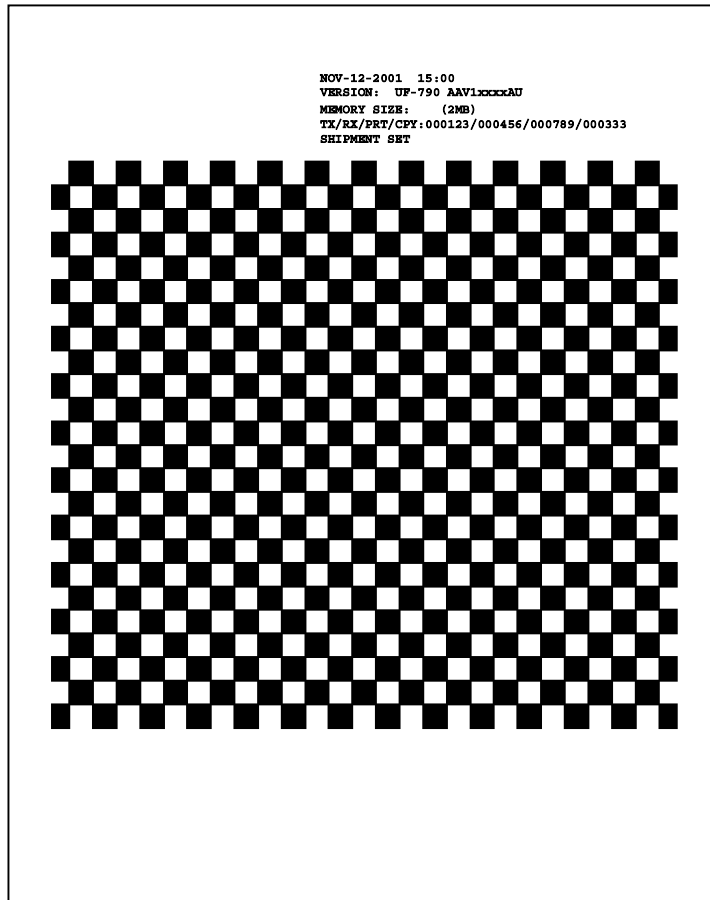
5.1.3.3. Printer Report

All printer errors are logged on the Printer Report which can be printed by the following procedure.

Step	Operation or Unit Condition	LCD Display
	Service Mode 3 - Printer Report	
1	Standby	`NOV-12-2001  15:00` `              00%`
2	Press "FUNCTION" and then "7".	`SET MODE       (1-6)` `ENTER NO. OR ∨∧`
3	Press "MONITOR" four times, then press "*".	`SERVICE MODE` `ENTER NO. OR ∨∧`
4	Press "3".	`PRINTOUT (1-7)` `1:FUNC. PARAM. LIST`
5	Press "4" and "START".	`* PRINTING *` `PRINTER REPORT`
7	After printing is completed, the unit returns to the display in step 3.	`SERVICE MODE` `ENTER NO. OR ∨∧`
8	Press "STOP" to return to standby.	`NOV-12-2001  15:00` `              00%`

```
**************-PRINTER REPORT-******************** DATE NOV-12-2001 ***** TIME 19:02********

         LAST PRINT ERROR        : NOV-12 15:38 NO. 001-12

         CUSTOMER ID             : 1234567890123456

         FAX ROM VERSION         : UF-790 AAV1xxxxAU


         TRANSMIT COUNTER        : 000475
         RECEIVE COUNTER         : 000398
         COPY COUNTER            : 001083
         PRINT COUNTER           : 001575

         PRINT ERROR             :  1.NOV-11-2001 15:38 NO.001-12
                                     2.NOV-10-2001 10:48 NO.001-11
                                     3.NOV-09-2001 15:23 NO.004-36
                                         -       PANASONIC      -
**************************** -    PANAFAX UF-790    - ***** - 12345678901234567890  - ******
```

1. Printer Error Code Table

Error Code	Description of Problems	Cause
00	No problem detected.	
11	Timing Sensor did not turn ON within a certain period of time. (Original Cassette Feeder)	1. Recording Paper misfeeding, Paper Feed Roller defective. 2. Drive Clutch defective. 3. Timing Sensor defective.
12	Timing Sensor did not turn ON within a certain period of time. (250 sheet Optional Cassette Feeder)	1. Recording Paper misfeeding, Paper Feed Roller defective. 2. Drive Clutch defective. 3. Timing Sensor defective.
14	Timing Sensor did not turn OFF within a certain period of time.	1. Recording Paper Jam. 2. Timing Sensor defective. 3. Incorrect paper size setting.
15	Paper Exit Sensor did not turn ON within a certain period of time.	1. Recording Paper Jam. 2. Paper Exit Sensor defective.
16	Paper Exit Sensor did not turn OFF within a certain period of time.	1. Recording Paper Jam. 2. Paper Exit Sensor defective.
17	Timing Sensor detected paper while initializing the unit.	1. Recording Paper jammed in the unit. 2. Timing Sensor defective.
18	Paper Exit Sensor detected paper while initializing the unit.	1. Recording Paper jammed in the unit. 2. Paper Exit Sensor defective.
22	The temperature of the Fuser Roller remained low even after the circuit was activated.	1. Fuser Unit defective. 2. SC PCB defective. 3. Power Supply Unit defective.
23	Abnormally high Fuser Roller temperature after the circuit was de-activated.	1. Fuser Unit defective. 2. SC PCB defective. 3. Power Supply Unit defective.
24	The temperature of the Fuser Roller was not controlled within a certain margin.	1. Fuser Unit defective. 2. SC PCB defective. 3. Power Supply Unit defective.
25	Thermistor open. (See Note)	1. Thermistor defective (Fuser Unit). 2. SC PCB defective.
26	Thermistor detected temperature over 392°F (200°C). (See Note)	1. Thermistor defective (Fuser Unit). 2. SC PCB defective. 3. Power Supply Unit defective.
31	The Tetragon Motor did not reach a constant speed of 7,018 rpm (400dpi)/10,762 rpm (600dpi) within a specified period of time.	1. LSU defective.
32	The Tetragon Motor did not maintain a constant speed of 7,018 rpm (400dpi)/10,762 rpm (600dpi).	1. LSU defective.
36	HSYNC signal abnormal.	1. LSU defective. 2. SC PCB defective.
54	A/D Converter error.	1. SC PCB defective.
61	Unit detected "No Toner Cartridge".	1. Toner Cartridge not installed. 2. Toner Sensor defective.
63	Unit detected "Printer Cover Open".	1. Printer Cover is not closed. 2. ILS PCB defective.

Error Code	Description of Problems	Cause
64	Unit detected "No Cassette".	1. Cassette not installed or partially open. 2. Cassette Sensor defective.
65	Unit detected "Out of Paper".	1. The Paper Cassette is empty. 2. Paper Detect Sensor defective.
81	No response from LP Controller.	1. SC PCB defective.
82	Illegal response from LP Controller.	1. SC PCB defective.

Note:

If an 021 series Error Code occurs, 021-25 (Thermistor Open) or 021-26 (Thermistor detected temperarure over 392°F (200°C), a pre-programmed recovery safety software is activated to protect the unit and the service personnel during abnormal increase in temperature.

Once activated, this program is downloaded into the LPC PC Board's SRAM, disabling the Fuser Lamp and preventing it from turning ON again.

In order to reset this circuit, please follow the procedure below.
   1) Reset the LBP Fuser by using Service Mode 7-1-2 (Section 5.1.7.) and Power OFF/ON.
   2) Replace the Thermistor or Fuser Unit. If the problem persists.
   3) Replace the SC PCB.

2. Printer Error Detail Explanation
Recording Paper Jam Detection

Feed Solenoid
(nADF1) (CN14, 2)

Recording Paper Size Setting	A sec
Legal	0.2
A4	0.2
Letter	0.2

A

Timing Sensor
(nRSEN)

1.35s

E11
Timing Sensor
did not turn ON

0.55s

4.5s

E001 will be logged when nRSEN does not go low between 0.55sec to 4.5sec after pADF1 goes high.

E14
Timing Sensor
did no turn OFF

Recording Paper Size Setting	B sec	C sec
Legal	9.05	10.25
A4	7.48	8.68
Letter	7.00	8.20

E007 will be logged when nRSEN does not go OFF between B sec to C sec after nRSENA goes ON.

B C

Paper Exit
Sensor Timing
(nESEN) (CN7, 4)

4.25s

E15
Paper Exit
Sensor did not
turn ON

3.85s

5.05s

E007 will be logged when nESEN does not go low between 3.85sec or 5.05sec after Timing Sensor goes low.

E16
Paper Exit
Sensor did not
turn OFF

D E

Recording Paper Size Setting	D sec	E sec
Legal	8.12	10.25
A4	6.56	8.68
Letter	6.08	8.20

E007 will be logged when nESEN does not go high between D sec or E sec after nESEN goes low.

154

Fuser Error Detection

(°C)

E26 will be logged.

200

E24 will be logged if Thermistor detects 180°C
for more than 3 sec. (Thermostat will open.)

180

E23 will be logged if Thermistor
detects 175°C or higher for 5 min.
after Fuser Lamp is turned Off.

170

OFF

165

160

155

150

E24 will be logged if
Thermistor detects less
than 140°C for 3 sec during
the print process.

Fuser Roller Temperature

70

E22 will be logged when
temperature does not rise.

25

E25 will be logged when
14   temperature does not go up
at low temperature
environment.

Approx. 30sec

Time

155

Laser Unit (LSU) Error Detection

nPRNT
Print Start

nPMON
(CN69-3)
Tetragon Motor ON

nPMRY
(CN69-2)
Tetragon Motor Ready

Normal Condition

Motor ON | 3 sec | 20 sec

E31
nPMRY
Tetragon Motor does not
reach constant speed
during wake up state.

nPMRY does not go low for more than 2 sec during 3 sec to
20 sec after nPMON goes low.

E32
nPMRY
Tetragon Motor does not
maintain constant speed.

nPMON | nPMRY:ON | OFF | OFF | OFF | OFF

nPMRY goes high 4 times during printing.

nVIDEO
(CN68-6)
Laser Timing Signal

1.7 ms (400 dpi)
1.1 ms (600 dpi)

Normal Condition

nHSYNC
(CN68-2)
Laser Timing Detection

E36
nHSYNC
(CN68-2)
Can not detect
Laser Timing

nHSYNC timing signal is less than 60% of nVIDEO signal.

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Out of Toner Detection

Toner Sensor Output Signal

Status A
(Enough toner in the cartridge)

3V

Max. - min. voltage is less than 1.0V
Min. voltage is more than 1.4V

2V

Status B
(Remaining toner is getting low)

Max. - min. voltage is less than 0.25V
Min. voltage is less than 1.4V

1.4V

Status C
(Almost no toner)

1V

Mixing blade rotating cycle

Max. - min. voltage is less than 0.08V
Min. voltage is less than 1.4V

0V

Toner Sensor output may change when the mixing blade passes above the Toner Sensor. Therefore the output signal has a max. voltage and min. voltage during mixing blade rotation cycle (4.6 sec.).

E043

If the unit detects Status B, 10 times during printing, the machine recognizes that the remaining toner is low and the display shows "REPLACE TONER CARTRIDGE".

E041

After detecting E043 and the LBP Print Available Counter Value reaches "0" (after 100 pages are printed), the unit logs E041 (OUT OF TONER).

E045

If the unit detects Status C when power is On, the unit logs E045 and displays "NO CARTRIDGE". The unit will recover when detecting Status A after a new toner cartridge is installed.

5.1.3.4.　All Document Files

Print the document files from the Flash Memory.

Service Mode 3 - All Document Files		
Step	Operation or Unit Condition	LCD Display
1	Standby	`NOV-12-2001  15:00` `              00%`
2	Press "FUNCTION" and then "7".	`SET MODE        (1-6)` `ENTER NO. OR ∨ ∧`
3	Press "MONITOR" four times, then press "*".	`SERVICE MODE` `ENTER NO. OR ∨ ∧`
4	Press "3".	`PRINTOUT (1-7)` `1:FUNC. PARAM. LIST`
5	Press "5" and "START".	`* PRINTING *` `ALL DOCUMENT FILES`
6	After printing is completed, the unit returns to the display in step 3.	`SERVICE MODE` `ENTER NO. OR ∨ ∧`
7	Press "STOP" to return to standby.	`NOV-12-2001  15:00` `              00%`

Note:
　　Documents received with a Confidential Code will not be printed by this operation.

5.1.3.5. Protocol Trace

Print a Protocol Trace Report for the previous communication.

<table>
<tr><th colspan="3">Service Mode 3 - Protocol Trace</th></tr>
<tr><th>Step</th><th>Operation or Unit Condition</th><th>LCD Display</th></tr>
<tr>
<td>1</td>
<td>Standby</td>
<td>

```
NOV-12-2001  15:00
                00%
```
</td>
</tr>
<tr>
<td>2</td>
<td>Press "FUNCTION" and then "7".</td>
<td>

```
SET MODE        (1-6)
ENTER NO. OR ∨ ∧
```
</td>
</tr>
<tr>
<td>3</td>
<td>Press "MONITOR" four times, then press "*".</td>
<td>

```
SERVICE MODE
ENTER NO. OR ∨ ∧
```
</td>
</tr>
<tr>
<td>4</td>
<td>Press "3".</td>
<td>

```
PRINTOUT (1-7)
1:FUNC. PARAM. LIST
```
</td>
</tr>
<tr>
<td>5</td>
<td>Press "6" and "START".
Note:
If there were no transmission or reception mode after the power is last tured on, you cannot print the Protocol Trace Report.</td>
<td>

```
* PRINTING *
PROTOCOL TRACE
```
</td>
</tr>
<tr>
<td>6</td>
<td>After printing is completed, the unit returns to the display in step 3.</td>
<td>

```
SERVICE MODE
ENTER NO. OR ∨ ∧
```
</td>
</tr>
<tr>
<td>7</td>
<td>Press "STOP" to return to standby.</td>
<td>

```
NOV-12-2001  15:00
                00%
```
</td>
</tr>
</table>

```
*************** PROTOCOL LOG REPORT ***************** DATE NOV-12-2001 ***** TIME 16:56 ***P.01


            STATUS        : OK
            MODE          : ECM-TX  (STANDARD)
            SPEED         : 9600bps  00MS/L
            REMOTE CAPA.  : DIS 00 CE B9 C4 80 12
            LOCAL CAPA.   : TSI 2B 20 20 20 38 37 2B 2B 2B 2B
                               39 38 36 36 35 34 37 38 38 30
                           DCS 00 C6 F8 44

            COMMAND LOG.
            REMOTE        : NSF  CSI  DIS             CFR
            LOCAL         :                 TSI  DCS       PIX  PPS-EOP
            --------------------------------------------------------------
            REMOTE        : MCF
            LOCAL         :        DCN
                                                  -PANASONIC-

******************************** -PANAFAX UF-790- **********-12345678901234567890-******
```

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5.1.3.6. Toner Cartridge Order Form

The Toner Cartridge Order Form can be printed out manually by the following procedure.

Service Mode 3 - Toner Cartridge Order Form		
Step	Operation or Unit Condition	LCD Display
1	Standby	NOV-12-2001 15:00 00%
2	Press "FUNCTION" and then "7".	SET MODE (1-6) ENTER NO. OR ∨∧
3	Press "MONITOR" four times, then press "*".	SERVICE MODE ENTER NO. OR ∨∧
4	Press "3".	PRINTOUT (1-7) 1:FUNC. PARAM. LIST
5	Press "7" and "START".	* PRINTING * TONER ORDER FORM
6	After printing is completed, the unit returns to the display in step 3.	SERVICE MODE ENTER NO. OR ∨∧
7	Press "STOP" to return to standby.	NOV-12-2001 15:00 00%

161

For USA and Canada

```
            ****************************************
            >      TONER CARTRIDGE ORDER FORM       <
            ****************************************


       **** The toner supply in your facsimile machine is running low **** (1)
            To order a replacement Cartridge from your Authorized Dealer

                              Panafax Corp. (2)

                   by Phone:  1 201 111 5555 (3)
                   by Fax:    1 201 111 4444 (4)

                          Thank you for your order.



                          Customer Name and Address
                          =========================

    Ship to:_____        Bill to:_____

    _____                _____

    _____                _____

    Attention:_____        Attention:_____

    Phone No.:_____        Phone No.:_____

    Customer ID: ABC COMPANY (5)            P.O. No.(if required):_____

    Toner Cartridge: UG-5510      (6)        Serial No.:_____

                          Quantity Required:

                              ┌──────────┐
                              │          │
                              └──────────┘




                                                                    /    /
    _____          _____
    Print your name and title               Signature & Date
```

Explanation of Contents

(1) Low Toner Message (Fixed)	"The toner supply in your machine is running low"
(2) Dealer Name	Up to 25 digits
(3) Order Tel #	Up to 36 digits
(4) Order Fax #	Up to 36 digits
(5) Customer ID	Up to 16 characters (User Identification Code)
(6) Toner Cartridge #	UG-5510 (For USA / Canada) for UF-790

For Other Destinations

```
                    *************************************
                    >     TONER CARTRIDGE ORDER FORM        <
                    *************************************


          **** The toner supply in your facsimile machine is running low **** (1)
              To order a replacement Cartridge from your Authorized Dealer

                              Panafax Corp. (2)

                   by Phone:  1 201 111 5555 (3)
                   by Fax:    1 201 111 4444 (4)

                          Thank you for your order.



                       Customer Name and Address
                       =========================


   Ship to:_____      Bill to:_____

   _____      _____

   _____      _____

   Attention:_____      Attention:_____

   Phone No.:_____      Phone No.:_____

   Customer ID: ABC COMPANY (5)           P.O. No.(if required):_____

   Toner Cartridge: UG-3350     (6)       Serial No.:_____


                          Quantity Required:

                          ┌─────────┐
                          │         │
                          └─────────┘




                                                              /     /
   _____           _____
   Print your name and title             Signature & Date
```

Explanation of Contents

(1) Low Toner Message (Fixed)	"The toner supply in your machine is running low"
(2) Dealer Name	Up to 25 digits
(3) Order Tel #	Up to 36 digits
(4) Order Fax #	Up to 36 digits
(5) Customer ID	Up to 16 characters (User Identification Code)
(6) Toner Cartridge #	UG-3350 (For Other Destinations) for UF-590

5.1.4. Service Mode 4 (Modem Test)

5.1.4.1. Binary Signal

This Service Mode is used to check the binary signal output. Signals can be output to the line using the following procedure.

<table>
<tr><td colspan="3">Service Mode 4 - Binary Signal</td></tr>
<tr><th>Step</th><th>Operation or Unit Condition</th><th>LCD Display</th></tr>
<tr><td>1</td><td>Standby</td><td><pre>NOV-12-2001 15:00
                   00%</pre></td></tr>
<tr><td>2</td><td>Press "FUNCTION" and then "7".</td><td><pre>SET MODE   (1-6)
ENTER NO. OR ∨∧</pre></td></tr>
<tr><td>3</td><td>Press "MONITOR" four times, then press "*".</td><td><pre>SERVICE MODE
ENTER NO. OR ∨∧</pre></td></tr>
<tr><td>4</td><td>Press "4".</td><td><pre>MODEM TEST (1-5)
1:SIGNAL TEST</pre></td></tr>
<tr><td>5</td><td>Press "START".</td><td><pre>SIGNAL TEST
IDLE (ENTER 1-9)</pre></td></tr>
<tr><td>6</td><td>Enter the signal number (1-9) to select the binary signal.</td><td><pre>SIGNAL TEST
300bps</pre></td></tr>
<tr><td>7</td><td>Press "CLEAR" to end the signal generation. To select another signal, repeat step 6.</td><td><pre>SIGNAL TEST
IDLE (ENTER 1-9)</pre></td></tr>
<tr><td>8</td><td>Press "STOP" twice to return to standby.</td><td><pre>NOV-12-2001 15:00
                   00%</pre></td></tr>
</table>

Binary Signal Table

Number	Signals
1	V21 300bps
2	V27ter 2400bps
3	V27ter 4800bps
4	V29 7200bps
5	V29 9600bps
6	V17 TC7200bps
7	V17 TC9600bps
8	V33 12000bps
9	V33 14400bps

5.1.4.2. Tonal Signal

This Service Mode is used to check the tonal signal output. Signals can be output to the line using the following procedure.

Service Mode 4 - Tonal Signal		
Step	Operation or Unit Condition	LCD Display
1	Standby	`NOV-12-2001  15:00` `                 00%`
2	Press "FUNCTION" and then "7".	`SET MODE        (1-6)` `ENTER NO. OR ∨∧`
3	Press "MONITOR" four times, then press "*".	`SERVICE MODE` `ENTER NO. OR ∨∧`
4	Press "4".	`MODEM TEST (1-5)` `1:SIGNAL TEST`
5	Press "2" and "START".	`TONAL TEST` `IDLE (ENTER 1-7)`
6	Enter the signal number (1-7) to select the binary signal.	`TONAL TEST` `1080Hz`
7	Press "CLEAR" to end the signal generation. To select another signal, repeat step 6.	`TONAL TEST` `IDLE (ENTER 1-7)`
8	Press "STOP" twice to return to standby.	`NOV-12-2001  15:00` `                 00%`

Tonal Signal Table

Number	Signals
1	462 Hz
2	1080 Hz
3	1100 Hz
4	1300 Hz
5	1650 Hz
6	1850 Hz
7	2100 Hz

5.1.4.3. DTMF Signal

This Service Mode is used to check the DTMF (Dual Tone Multi Frequency) signal output.
The DTMF signal can be generated using the following procedure.

content		
Service Mode 4 - DTMF Signal		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	`NOV-12-2001  15:00` `                00%`
2	Press "FUNCTION" and then "7".	`SET MODE       (1-6)` `ENTER NO. OR ∨∧`
3	Press "MONITOR" four times, then press "*".	`SERVICE MODE` `ENTER NO. OR ∨∧`
4	Press "4".	`MODEM TEST (1-5)` `1:SIGNAL TEST`
5	Press "3" and "START".	`DTMF TEST (1-2)` `1.SINGLE`
6a	Press "START" for DTMF Single Tone Generation.	`SINGLE TONE` `ENTER (1-8)`
7a	Enter the signal number (1-8) to select the DTMF signal.	`SINGLE TONE` `697Hz`
6b	Press "2" and "START" for Dual Tone Generation.	`DUAL TONE` `ENTER (0-#)`
7b	Enter the signal number (0-#) to select the DTMF Dual tone.	`DUAL TONE` `(0)`
8	Press "CLEAR" to end the signal generation. To select another signal, repeat step 7a or 7b.	`SINGLE TONE` `ENTER (1-8)`
9	Press "STOP" twice to return to standby.	`NOV-12-2001  15:00` `                00%`

DTMF Single Tone Table

Number	DTMF Signal Tones
1	697 Hz
2	770 Hz
3	852 Hz
4	941 Hz
5	1209 Hz
6	1336 Hz
7	1477 Hz
8	1633 Hz

DTMF Dual Tone Table

Number	DTMF Dual Tones
0	941 Hz + 1336 Hz
1	697 Hz + 1209 Hz
2	697 Hz + 1336 Hz
3	697 Hz + 1477 Hz
4	770 Hz + 1209 Hz
5	770 Hz + 1336 Hz
6	770 Hz + 1477 Hz
7	852 Hz + 1209 Hz
8	852 Hz + 1336 Hz
9	852 Hz + 1477 Hz
*	941 Hz + 1209 Hz
#	941 Hz + 1477 Hz

5.1.4.4. Binary Signal (V.34)

This Service Mode is used to check the binary signal output. Signals can be output to the line using the following procedure. (V.34)

<table>
<tr><th colspan="3">Service Mode 4 - Binary Signal</th></tr>
<tr><th>Step</th><th>Operation or Unit Condition</th><th>LCD Display</th></tr>
<tr><td>1</td><td>Standby</td><td>NOV-12-2001 15:00
                  00%</td></tr>
<tr><td>2</td><td>Press "FUNCTION" and then "7".</td><td>SET MODE   (1-6)
ENTER NO. OR ∨∧</td></tr>
<tr><td>3</td><td>Press "MONITOR" four times, then press "*".</td><td>SERVICE MODE
ENTER NO. OR ∨∧</td></tr>
<tr><td>4</td><td>Press "4".</td><td>MODEM TEST (1-5)
1:SIGNAL TEST</td></tr>
<tr><td>5</td><td>Press "5" and "START".</td><td>V.34 MODEM TEST
ENTER NO.█</td></tr>
<tr><td>6</td><td>Enter the signal number (01-61) and press [START] to select the binary signal.</td><td>V.34 MODEM TEST
V34 2400sr 2400bps</td></tr>
<tr><td>7</td><td>Press "CLEAR" to end the signal generation. To select another signal, repeat step 6.</td><td>V.34 MODEM TEST
ENTER NO.█</td></tr>
<tr><td>8</td><td>Press "STOP" twice to return to standby.</td><td>NOV-12-2001 15:00
                  00%</td></tr>
</table>

Binary Signal Table

Number	Signals	Number	Signals	Number	Signals
01	V34 2400 sr 2400 bps	22	V34 3000 sr 9600 bps	43	V34 3429 sr 4800 bps
02	V34 2400 sr 4800 bps	23	V34 3000 sr 12000 bps	44	V34 3429 sr 7200 bps
03	V34 2400 sr 7200 bps	24	V34 3000 sr 14400 bps	45	V34 3429 sr 9600 bps
04	V34 2400 sr 9600 bps	25	V34 3000 sr 16800 bps	46	V34 3429 sr 12000 bps
05	V34 2400 sr 12000 bps	26	V34 3000 sr 19200 bps	47	V34 3429 sr 14400 bps
06	V34 2400 sr 14400 bps	27	V34 3000 sr 21600 bps	48	V34 3429 sr 16800 bps
07	V34 2400 sr 16800 bps	28	V34 3000 sr 24000 bps	49	V34 3429 sr 19200 bps
08	V34 2400 sr 19200 bps	29	V34 3000 sr 26400 bps	50	V34 3429 sr 21600 bps
09	V34 2400 sr 21600 bps	30	V34 3000 sr 28800 bps	51	V34 3429 sr 24000 bps
10	V34 2800 sr 4800 bps	31	V34 3200 sr 4800 bps	52	V34 3429 sr 26400 bps
11	V34 2800 sr 7200 bps	32	V34 3200 sr 7200 bps	53	V34 3429 sr 28800 bps
12	V34 2800 sr 9600 bps	33	V34 3200 sr 9600 bps	54	V34 3429 sr 31200 bps
13	V34 2800 sr 12000 bps	34	V34 3200 sr 12000 bps	55	V34 3429 sr 33600 bps
14	V34 2800 sr 14400 bps	35	V34 3200 sr 14400 bps	56	ANSam
15	V34 2800 sr 16800 bps	36	V34 3200 sr 16800 bps	57	CM
16	V34 2800 sr 19200 bps	37	V34 3200 sr 19200 bps	58	JM
17	V34 2800 sr 21600 bps	38	V34 3200 sr 21600 bps	59	INFO0c & TONEB
18	V34 2800 sr 24000 bps	39	V34 3200 sr 24000 bps	60	INFO0c & TONEA
19	V34 2800 sr 26400 bps	40	V34 3200 sr 26400 bps	61	PPh & AC & ALT
20	V34 3000 sr 4800 bps	41	V34 3200 sr 28800 bps		
21	V34 3000 sr 7200 bps	42	V34 3200 sr 31200 bps		

5.1.5. Service Mode 5 (Diagnostic)

5.1.5.1. CCD Test

This Service Mode is used to check the CCD.
Use the following procedure to initiate the test.

<table>
<tr><th colspan="3">Service Mode 5</th></tr>
<tr><th>Step</th><th>Operation or Unit Condition</th><th>LCD Display</th></tr>
<tr>
<td>1</td>
<td>Standby</td>
<td>

```
NOV-12-2001  15:00
              00%
```
</td>
</tr>
<tr>
<td>2</td>
<td>Press "FUNCTION" and then "7".</td>
<td>

```
SET MODE        (1-6)
ENTER NO. OR ∨∧
```
</td>
</tr>
<tr>
<td>3</td>
<td>Press "MONITOR" four times, then press "*".</td>
<td>

```
SERVICE MODE
ENTER NO. OR ∨∧
```
</td>
</tr>
<tr>
<td>4</td>
<td>Press "5".</td>
<td>

```
DIAGNOSTIC (1-3)
1:CCD TEST
```
</td>
</tr>
<tr>
<td>5</td>
<td>Press "START".
The Scanner will be active.</td>
<td>

```
1:CCD TEST
* CHECK NOW *
```
</td>
</tr>
<tr>
<td>6</td>
<td>Press "STOP" twice to return to standby.</td>
<td>

```
NOV-12-2001  15:00
              00%
```
</td>
</tr>
</table>

5.1.5.2.   LCD / LED Test

This Service Mode is used to check the LCD and LEDs on the Control Panel.
Use the following procedure to initiate the test.

Service Mode 5		
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	```NOV-12-2001 15:00``` ``` 00%```
2	Press "FUNCTION" and then "7".	```SET MODE (1-6)``` ```ENTER NO. OR ∨∧```
3	Press "MONITOR" four times, then press "*".	```SERVICE MODE``` ```ENTER NO. OR ∨∧```
4	Press "5".	```DIAGNOSTIC (1-3)``` ```1:CCD TEST```

5	Press "2" and "START".
	    1) LCDs display as shown at right.
	    2) All LEDs will be lit.
		```2:LCD/LED TEST```
		```* CHECK NOW *```
		
		▉▍▍▍▍▍▍▍▍▍▍▉
		▉▍▍▍▍▍▍▍▍▍▍▉

6	Press "STOP" twice to return to standby.	```NOV-12-2001 15:00``` ``` 00%```

5.1.6.   Service Mode 6 (RAM Initialization)

Initializes the RAM and restores the Function Parameters to their default values.

Note:
   This operation should be performed when the unit is first installed.

	Service Mode 6	
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	`NOV-12-2001  15:00` `                00%`
2	Press "FUNCTION" and then "7".	`SET MODE       (1-6)` `ENTER NO. OR ∨∧`
3	Press "MONITOR" four times, then press "*".	`SERVICE MODE` `ENTER NO. OR ∨∧`
4	Press "6".	`* RAM INITIALIZE *` `ENTER NO. OR ∨∧`
5	Press "∨" or "∧ " to select the initialization mode. (See Table)	`* RAM INITIALIZE *` `LOGO/ID/PSWD CLEAR`
6	Press "START".	`LOGO/ID/PSWD CLEAR` `* COMPLETED *`
7	Return to step 3 and press "STOP" to return to standby.	`NOV-12-2001  15:00` `                00%`

RAM Initialization Table

No.	Initialize Mode	Description
99	SHIPMENT SET (A)	Deletes all setting information, except parameter number 80 and 81, then set default values. (See Note)
98	SHIPMENT SET (B)	Deletes all setting information, except parameter number 61, 80 and 81, then set default values. (See Note)
97	FLASH MEMORY CLEAR	Deletes all information in the Flash Memory.
16	LBP LOG CLEAR	Clears the Printer Error Log.
15	LOGO/ID/PSWD CLR	Clears the Logo, ID, Polling Password.
14	ALL JOB CLEAR	Clears all Jobs stored in Flash Memory.
13	PROG. DIAL CLEAR	Clears the Program keys.
12	AUTO DIAL CLEAR	Clears the One-touch, ABBR Numbers and Phone Books.
11	JOURNAL CLEAR	Clears the Journal contents.
*	PARAMETER INIT.	Restores the Fax and Function Parameters to default values.

5.1.7. Service Mode 7 (LBP Service Mode)

This Service Mode is used to change printer parameters and verify printer information.
Use the following procedure to change printer parameter.

<table>
<tr><th colspan="3">Service Mode 7</th></tr>
<tr><th>Step</th><th>Operation or Unit Condition</th><th>LCD Display</th></tr>
<tr><td>1</td><td>Standby</td><td>NOV-12-2001 15:00
                 00%</td></tr>
<tr><td>2</td><td>Press "FUNCTION" and then "7".</td><td>SET MODE   (1-6)
ENTER NO. OR ∨∧</td></tr>
<tr><td>3</td><td>Press "MONITOR" four times, then press "*".</td><td>SERVICE MODE
ENTER NO. OR ∨∧</td></tr>
<tr><td>4</td><td>Press "7".</td><td>LP SERVICE MODE (1-2)
1:LBP PARAMETER SET</td></tr>
<tr><td>5</td><td>1) Press "START" for printer parameter settings.
Press "2" and "START" to get the printer information.
Ex: Enter "START" for printer parameter settings.</td><td>LBP PARAMETER SET
1.PRINTER COUNTER</td></tr>
<tr><td>6</td><td>Press "3" and "START".
Then enter the number of pages.
Ex: Enter "50" and press "START".</td><td>LBP PARAMETER SET
3.OUT OF TONER</td></tr>
<tr><td>7</td><td>Press "∨" or "∧" to select another Parameter Name (See Table) or press "CLEAR" to return to step 4.</td><td>LP SERVICE MODE (1-2)
1.LBP PARAMETER SET</td></tr>
<tr><td>8</td><td>Repeat step 5 through 7 to request operation, or press "STOP" twice to return to standby.</td><td>NOV-12-2001 15:00
                 00%</td></tr>
</table>

<table>
<tr><th colspan="2">Sub-Code</th><th>Parameter Name</th><th>Description</th></tr>
<tr><td rowspan="3">1</td><td>1</td><td>PRINTER COUNTER</td><td>Displays and resets the Printer and Paper Cassette(s) counters.</td></tr>
<tr><td>2</td><td>LBP FUSER RESET</td><td>Clears the LBP Fuser Error.</td></tr>
<tr><td>3</td><td>OUT OF TONER</td><td>Sets the number of pages to print after low toner is detected. (Factory default = 100, adjustable from 0 - 999)</td></tr>
<tr><td rowspan="2">2</td><td>∨∧</td><td>PRINT AVAILABLE</td><td>Shows the remaining number of allowable printable pages after low toner has been detected (Counter Only).</td></tr>
<tr><td>∨∧</td><td>LBP MEMORY CAPACITY</td><td>Shows the Page Memory Capacity.</td></tr>
</table>

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5.1.8. Service Mode 8 (Check & Call)

5.1.8.1. Overview

This feature enables the Authorized Servicing Dealers to manage and improve the Fax machine maintenance to their customers by alerting them of equipment problems. It also can be used as a Supply Sales Tool by alerting the Dealer that the unit is running Low on Toner. The function overview is as follows:

1. The machine's printer error information is stored in the Printer Report.
2. The printer report can be manually printed when required.
3. When printer errors occurs, the unit can automatically transmit the Service Alert Report to the pre-registered telephone number.
4. When the unit detects Low Toner, it can automatically transmit the Maintenance Alert Report to the pre-registered telephone number.
5. When the unit detects Low Toner, it can automatically print out the Toner Order Form with pre-registered order information.

5.1.8.2. Printer Reports

• **Conditions under which a report can be printed or transmitted**

1. Manual print
   The Printer Report can be printed by Service Mode 3. (See Sect. 5.1.3.1.)
2. Automatic transmission/printout
3. Service Alert Report
   When the unit detects an Emergency Printer Error, the unit will immediately transmit the Service Alert Report to the pre-registered telephone number. However, the unit will not transmit the Service Alert Report if it finds the same error within the same date in the error log.
4. Maintenance Alert Report
   When the unit detects Low Toner, the unit can automatically transmit the Maintenance Alert Report to the pre-registered telephone number. Refer to the Printer Error Code Table.
5. Toner Cartridge Order Form
   When the unit detects Low Toner, the unit can automatically print the Toner Order Form with the pre-registered order information.

Note:
The Service and Maintenance Alert Reports are managed in the same manner as the normal memory transmission (Retry, Incomplete, File List, Display while it is transmitting, Journal).

• **Printer Error Code Table**

Info. Code	Printer Error Code	LED/LCD	Log Only	Tx Report	Condition	Content of Error
001	11	JAM	O		R/C	Paper Jam 1st Cassette.
002	12	JAM	O		R/C	Paper Jam 2nd Cassette.
007	14-18	JAM	O		R/C	Paper Exit Error.
010	00	NO PAPER			R/C	No Paper in 1st or 2nd Cassette.
011	64, 65	NO Cassette			S	No 1st or 2nd Cassette.
021	22-26		O	S	R/C	Fuser Problem / LP Thermistor disconnected Problem
041	00	TONER	O		S/R/C	No Toner
043	00	TONER	O	M	S/R/C	Low Toner Warning
045	61	TONER	O		S	No Toner Cartridge
051	54		O	S	R/C	Printer Error

Info. Code	Printer Error Code	LED/LCD	Log Only	Tx Report	Condition	Content of Error
054	31,32,36		O	S	R/C	LSU Problem
055	81, 82		O	S	R/C	No response from LP Controller
060						Rx Door Open

Note:
1. Tx Report: S = Service Alert Report, M = Maintenance Alert Report
2. Condition : R = Receive Mode, C = Copy Mode, S = Standby Mode, T = Transmit Mode

5.1.8.3. Setting Operation

```
8:CHECK & CALL
PRESS SET TO SELECT
```

SET or START

① ②

1

```
CHECK & CALL (1-7)
1:SVC. ALERT FAX #
```
CLEAR

SET or START
CLEAR

```
SERVICE ALERT FAX #
```

SET or START

Enter a destination fax number for the Service Alert Report.
When it is entered, the automatic transmission of the Service
Alert Report becomes effective.
Max. 36 digits (i.e. 201 111 2222)

2

```
CHECK & CALL (1-7)
2:MAINT. ALERT FAX #
```
CLEAR

SET or START
CLEAR

```
MAINT. ALERT FAX #
```

SET or START

Enter a destination fax number for the Maintenance Alert
Report. When it is entered, the automatic transmission of the
Maintenance Alert Report becomes effective.
Max. 36 digits (i.e. 201 111 3333)

3

```
CHECK & CALL (1-7)
3:TONER ORDER FAX #
```
CLEAR

SET or START
CLEAR

```
TONER ORDER FAX #
```

SET or START

Enter the supply fax number to be printed on the Toner Order
Form. When it is entered, the automatic print of the Toner
Order Form becomes effective.
Max. 36 digits (i.e. 201 111 4444)

4

```
CHECK & CALL (1-7)
4:TONER ORDER TEL #
```
CLEAR

SET or START
CLEAR

```
TONER ORDER TEL #
```

SET or START

Enter the supply telephone number to be printed on the Toner
Order Form.
Max. 36 digits (i.e. 201 111 5555)

5

```
CHECK & CALL (1-7)
5:DEALER NAME
```
CLEAR

SET or START
CLEAR

```
DEALER NAME
```

SET or START

Enter the Dealer's Name to be printed on the Toner Order
Form.
Max. 25 digits (i.e. Panafax Corp.)

6

```
CHECK & CALL (1-7)
6:CUSTOMER ID
```
CLEAR

SET or START
CLEAR

```
CUSTOMER ID
```

SET or START

Enter a Customer ID code to be printed on the Service Alert
Report, Maintenance Alert Report and Toner Order Form.
Max. 16 characters (i.e. ABC Company)

7

```
CHECK & CALL (1-7)
7:PRINTER REPORT XMT
```
CLEAR

SET or START

```
PRINTER REP. XMT:Off
1:OFF 2:ON
```

1   2

① ②

1

```
SERVICE MODE
ENTER NO. OR V ∧
```

2

```
* DIALING *
555 1234
```

After the Service Alert Report is faxed to
the pre-registered FAX #, the machine
returns to standby mode.

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Note

1. **Service Alert Report**

   To enable the automatic transmission of Service Alert Report, enter the destination fax telephone number in the "SERVICE ALERT (FAX #)" field. When a printer error occurs, the Service Alert Report is transmitted to the designated number automatically. A blank entry in this field, disables the Automatic transmission of the Service Alert Report.

2. **Maintenance Alert Report**

   To enable the automatic transmission of Maintenance Alert Report, enter the destination fax telephone number in the "MAINT. ALERT (FAX #)" field. When a printer error occurs, the Maintenance Alert Report is transmitted to the designated number automatically. A blank entry in this field, disables the Automatic transmission of the Maintenance Alert Report.

3. **Toner Cartridge Order Form**

   To enable the automatic printout of the Toner Cartridge Order Form, enter the destination fax telephone numbers in the "Order FAX #" field. When a low toner error occurs, the Toner Order Form is printed automatically.

4. **SERVICE ALERT FAX #**, this would be the fax telephone number for the Dealer's Service Department.
   MAINT. ALERT FAX #, this could be the fax telephone number for the Dealer's Supply Sales Desk.
   ORDER FAX #, this could be the fax telephone number for the Dealer's Supply Sales Desk.
   ORDER TEL #, this could be the voice telephone number for the Dealer's Supply Sales Desk.
   DEALER NAME, this name is printed on the Toner Order Form.
   CUSTOMER ID, to identify your customer, enter up to 16 characters user code in this field. This name will be printed on the Service Alert Report, Maintenance Alert Report and Toner Order Form.

5. **Printer Report XMT**

   To manually transmit the Service Alert Report to the pre-registered SERVICE ALERT REPORT FAX #, set the Printer Report XMT to "2:ON".

5.1.8.4. SERVICE ALERT REPORT FORMAT

```
**************************************************** DATE NOV-12-2001 ***** TIME 12:14 ********

                                     ***************************
                                     >    SERVICE ALERT REPORT    <
                                     ***************************

                                        (1)               (2) (3)
                      LAST PRINT ERROR : 11-10-01 12:10  No.999-00

                      CUSTOMER ID      :  ABC COMPANY (4)

                      FAX ROM VERSION  : UF-790 AAV1xxxxAU    (5)


                      TRANSMIT COUNTER : 999999 (6)
                      RECEIVE COUNTER  : 999999
                      COPY COUNTER     : 999999
                      PRINT COUNTER    : 999999

                      PRINT ERROR      :  11-10-01 12:10  No.999-00    (7)
                                       :  11-09-01 10:15  No.999-00
                                       :  11-08-01 13:48  No.999-00
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :          "
                                       :  11-06-01 17:10  No.999-00
                                       :  11-06-01 12:10  No.999-00
                                       :  11-05-01 08:10  No.999-00


                                                  -LOGO PANASONIC          -

********************************* -CHARACTER ID   - ***** -31415926535897932384-**********
```

Explanation of Contents

(1) Date & Time when a problem occurred

(2) Information Code

(3) Printer Error Code   Refer to Service Manual

(4) Customer ID   Up to 16 characters (User Identification Code)

(5) Fax ROM Version

(6) Transmission / Reception / Copy / Print Counters

(7) Print Error   Last 30 records (Latest on top)

5.1.8.5. MAINTENANCE ALERT REPORT FORMAT

```
************************************************** DATE NOV-12-2001 ***** TIME 12:14 ********

                                    ***************************
                                    > MAINTENANCE ALERT REPORT <
                                    ***************************

                   LAST PRINT ERROR : MACHINE IS RUNNING OUT OF TONER (1)

                   CUSTOMER ID      : ABC COMPANY (2)

                   FAX ROM VERSION  : UF-790 AAV1xxxxAU   (3)


                   TRANSMIT COUNTER : 999999 (4)
                   RECEIVE COUNTER  : 999999
                   COPY COUNTER     : 999999
                   PRINT COUNTER    : 999999



                                                 -LOGO PANASONIC          -

*********************************** -CHARACTER ID   - ***** -31415926535897932384-***********
```

Explanation of Contents

(1) Low Toner Message (Fixed)   "MACHINE IS RUNNING OUT OF TONER"

(2) Customer ID   Up to 16 characters (User Identification Code)

(3) Fax ROM Version

(4) Transmission / Reception / Copy / Print Counters

5.1.9.   Service Mode 9 (System Maintenance)

5.1.9.1.   Overview

This Service Mode is used to maintain and/or update the firmware of the machine. Use the following procedure for System Maintenance.

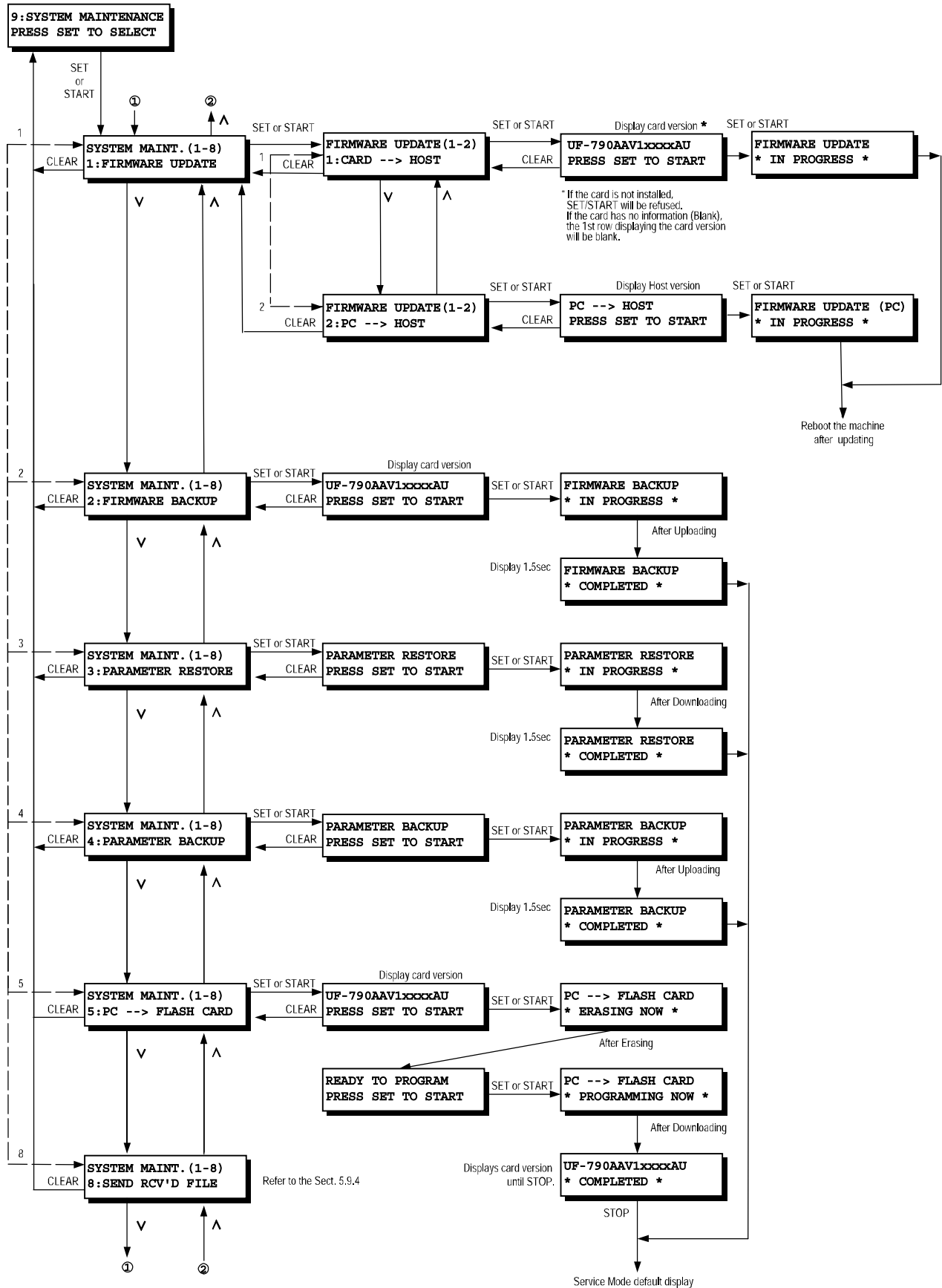|	Service Mode 9	
Step	**Operation or Unit Condition**	**LCD Display**
1	Standby	NOV-12-2001 15:00 00%
2	Press "FUNCTION" and then "7".	SET MODE (1-6) ENTER NO. OR ∨∧
3	Press "MONITOR" four times, then press "*".	SERVICE MODE ENTER NO. OR ∨∧
4	Press "9".	SYSTEM MAINT. (1-8) 1:FIRMWARE UPDATE
5	Press "START" to update the firmware. Enter No. or press "∨" or "∧" to select the maintenance to be performed. Ex: Enter "2".	SYSTEM MAINT. (1-8) 2:FIRMWARE BACKUP
6	Press "SET" and "START".	FIRMWARE BACKUP * IN PROGRESS *
7	After the backup is completed, repeat step 4 through 6 to request an operation.	SERVICE MODE ENTER NO. OR ∨∧
8	Press "STOP" twice to return to standby.	NOV-12-2001 15:00 00%

System Maintenance Table

| No.	Maintenance Mode	Description
1	FIRMWARE UPDATE	1:Card → Host Updates the firmware in the machine with the Master Firmware Card. 2:PC → Host Updates the firmware in the machine with the Master Firmware from the PC. After the firmware is updated, the machine reboots automatically and returns to standby. See Note 1.
2	FIRMWARE BACKUP	Creates a Backup Card of the machine's firmware. (A 2 MB or higher Flash Memory Card is required) See Note 2.
3	PARAMETER RESTORE	Restores the parameters from the Backup Card into the machine.
4	PARAMETER BACKUP	Creates a Backup Card of the machine's parameters. (A 1 MB or higher Flash Memory Card is required) See Note 2.
5	PC → FLASH CARD	Creates a Master Firmware Card using the Firmware Update Tool. (A 2 MB or higher Flash Memory Card is required)
8	SEND RECEIVED FILE	Transfers documents from memory to another fax machine during a fatal printer error.

Note:
1. For a UF-790 with Firmware V1.04 and updating the Firmware to V2.xx, please see Section 3.4.6 for Instructions.
2. The created Backup Card must be removed from the machine.

5.1.9.2. Operation

```
┌─────────────────────────┐
│ 9:SYSTEM MAINTENANCE     │
│ PRESS SET TO SELECT      │
└─────────────────────────┘
```

SET or START

① ②

1

```
┌─────────────────────┐   SET or START   ┌─────────────────────┐   SET or START   ┌─────────────────────┐   SET or START   ┌─────────────────────┐
│ SYSTEM MAINT.(1-8)  │ ───────────────> │ FIRMWARE UPDATE(1-2)│ ───────────────> │ UF-790AAV1xxxxAU    │ ───────────────> │ FIRMWARE UPDATE     │
│ 1:FIRMWARE UPDATE   │     CLEAR        │ 1:CARD --> HOST     │     CLEAR        │ PRESS SET TO START  │     CLEAR        │ * IN PROGRESS *     │
└─────────────────────┘ <─────────────── └─────────────────────┘ <─────────────── └─────────────────────┘                  └─────────────────────┘
```
CLEAR   Display card version *

* If the card is not installed,
SET/START will be refused.
If the card has no information (Blank),
the 1st row displaying the card version
will be blank.

```
                                        ┌─────────────────────┐   SET or START   ┌─────────────────────┐   SET or START   ┌─────────────────────┐
                                        │ FIRMWARE UPDATE(1-2)│ ───────────────> │ PC --> HOST         │ ───────────────> │ FIRMWARE UPDATE (PC)│
                                        │ 2:PC --> HOST       │     CLEAR        │ PRESS SET TO START  │                  │ * IN PROGRESS *     │
                                        └─────────────────────┘ <─────────────── └─────────────────────┘                  └─────────────────────┘
```
Display Host version

Reboot the machine
after updating

2

```
┌─────────────────────┐   SET or START   ┌─────────────────────┐   SET or START   ┌─────────────────────┐
│ SYSTEM MAINT.(1-8)  │ ───────────────> │ UF-790AAV1xxxxAU    │ ───────────────> │ FIRMWARE BACKUP     │
│ 2:FIRMWARE BACKUP   │     CLEAR        │ PRESS SET TO START  │     CLEAR        │ * IN PROGRESS *     │
└─────────────────────┘ <─────────────── └─────────────────────┘ <─────────────── └─────────────────────┘
```
Display card version   After Uploading

```
                                                                          ┌─────────────────────┐
Display 1.5sec                                                            │ FIRMWARE BACKUP     │
                                                                          │ * COMPLETED *       │
                                                                          └─────────────────────┘
```

3

```
┌─────────────────────┐   SET or START   ┌─────────────────────┐   SET or START   ┌─────────────────────┐
│ SYSTEM MAINT.(1-8)  │ ───────────────> │ PARAMETER RESTORE   │ ───────────────> │ PARAMETER RESTORE   │
│ 3:PARAMETER RESTORE │     CLEAR        │ PRESS SET TO START  │     CLEAR        │ * IN PROGRESS *     │
└─────────────────────┘ <─────────────── └─────────────────────┘ <─────────────── └─────────────────────┘
```
After Downloading

```
                                                                          ┌─────────────────────┐
Display 1.5sec                                                            │ PARAMETER RESTORE   │
                                                                          │ * COMPLETED *       │
                                                                          └─────────────────────┘
```

4

```
┌─────────────────────┐   SET or START   ┌─────────────────────┐   SET or START   ┌─────────────────────┐
│ SYSTEM MAINT.(1-8)  │ ───────────────> │ PARAMETER BACKUP    │ ───────────────> │ PARAMETER BACKUP    │
│ 4:PARAMETER BACKUP  │     CLEAR        │ PRESS SET TO START  │                  │ * IN PROGRESS *     │
└─────────────────────┘ <─────────────── └─────────────────────┘                  └─────────────────────┘
```
After Uploading

```
                                                                          ┌─────────────────────┐
Display 1.5sec                                                            │ PARAMETER BACKUP    │
                                                                          │ * COMPLETED *       │
                                                                          └─────────────────────┘
```

5

```
┌─────────────────────┐   SET or START   ┌─────────────────────┐   SET or START   ┌─────────────────────┐
│ SYSTEM MAINT.(1-8)  │ ───────────────> │ UF-790AAV1xxxxAU    │ ───────────────> │ PC --> FLASH CARD   │
│ 5:PC --> FLASH CARD │     CLEAR        │ PRESS SET TO START  │                  │ * ERASING NOW *     │
└─────────────────────┘ <─────────────── └─────────────────────┘                  └─────────────────────┘
```
Display card version   After Erasing

```
                                        ┌─────────────────────┐   SET or START   ┌─────────────────────┐
                                        │ READY TO PROGRAM    │ ───────────────> │ PC --> FLASH CARD   │
                                        │ PRESS SET TO START  │                  │ * PROGRAMMING NOW * │
                                        └─────────────────────┘                  └─────────────────────┘
```
After Downloading

```
                                        ┌─────────────────────┐
Displays card version                   │ UF-790AAV1xxxxAU    │
until STOP.                             │ * COMPLETED *       │
                                        └─────────────────────┘
```

8

```
┌─────────────────────┐
│ SYSTEM MAINT.(1-8)  │
│ 8:SEND RCV'D FILE   │   Refer to the Sect. 5.9.4
└─────────────────────┘
```

STOP

① ②

Service Mode default display

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5.1.10. Recovering from a Firmware Update Failure

If the Firmware Update is interrupted before completion, the machine will not be able to progress into the Standby Mode and the LCD display will remain Blank. If this happens, please follow the steps described below to recover from a failed firmware update.
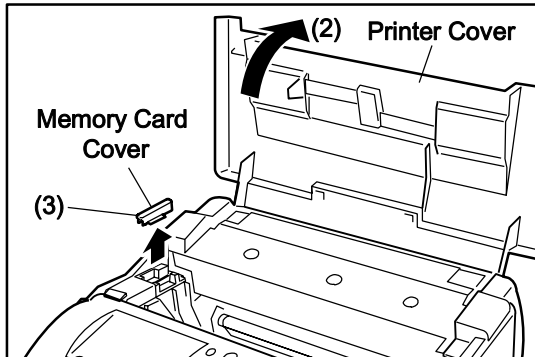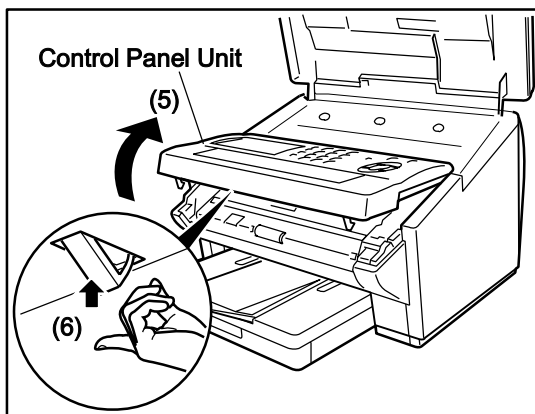

(1) Unplug the Power Cord.
(2) Open the Printer Cover.
(3) Remove the Memory Card Cover.
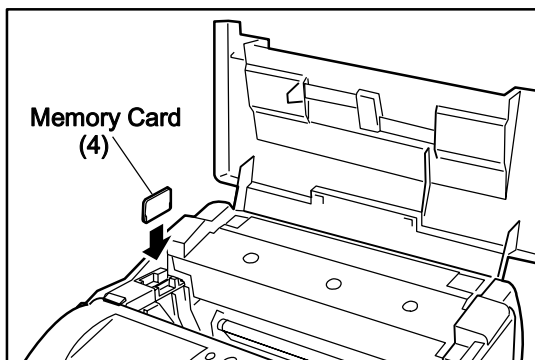
(4) Insert the Flash Memory Card gently into the card slot with the Panasonic logo facing to the outside of the machine.
Caution:
  Installing the Flash Memory Card in the wrong direction may damage the connecting pins inside the machine.

(5) Open the Control Panel Unit.
(6) Activate the Read Point Sensor with your finger and plug in the Power Cord.
(7) Wait approximately 10 seconds, release the Read Point Sensor, close the Control Panel Unit (ADF) and the Printer Cover.
(8) Allow the unit to complete the Firmware Update (approx. 1-minute). When completed, the unit will reboot and progress to the Standby Mode.
(9) Unplug the Power Cord.
(10) Remove the Flash Memory Card.
(11) Re-install the Memory Card Cover.
(12) Plug in the Power Cord.
(13) Perform Parameter Initialization.

Note:
● For updating the Firmware directly through the Parallel Port, please refer to the Firmware Update Tool (Parallel) Operating Instructions.
● For Updating the Firmware Remotely through the Phone Line, please refer to the Firmware Update Tool (Remote) Operating Instructions.
  Please inform to the Customer prior to proceeding with the Remote Firmware Update, to Never Unplug the Power Cord or turn the machine OFF. If the machine is turned OFF during the Remote Firmware Update, it may not be re-coverable at all. During the Remote Firmware Update, the LCD display shows ON LINE * DIAG *.

5.1.10.1. Send Received File

This function is the relief mode which makes it possible to retrieve memory received documents during a fatal printer error by transferring the documents to another fax machine.

```
┌─────────────────────────┐
│ NOV-12-2001 15:00       │◄──────────────────┐
│                    nn%  │                   │
└─────────────────────────┘                   │
         │ [FUNC] [7] [MON X4] [*]             │
         ▼                                     │
┌─────────────────────────┐                   │
│ SERVICE MODE            │                   │
│ ENTER NO. OR v ʌ        │                   │
└─────────────────────────┘                   │
         │ [9] [8]                            │
  [CLR]  ▼                    Pi-pi-pi         │
┌─────────────────────────┐       ┌───────────────────────────┐
│ SYSTEM MAINT.(1-8)      │       │ FILE DOES NOT EXIST       │
│ 8:SEND RCV FAX          │       └───────────────────────────┘
└─────────────────────────┘                   ▲
         │ [SET] or [START]     If no file was received
   Pi-pi-pi │
    [CLR]   ▼
┌─────────────────────────┐
│ ENTER STATION(S)        │
│ THEN PRESS START        │
└─────────────────────────┘
         │ Enter station
    [CLR]▼
┌─────────────────────────┐
│ <01> NEW YORK OFFICE    │
│ 212 555 1234            │
└─────────────────────────┘
         │ Enter another station
    [CLR]▼
┌─────────────────────────┐  [START]
│ <02> LONDON OFFICE      │
│ 011 44 123 4567         │
└─────────────────────────┘
         │ [SET]
    [CLR]▼
┌─────────────────────────┐
│ 2 STN(S) ARE SET        │
│ ADD MORE OR START       │
└─────────────────────────┘
  [SET]  │ [START]
         ▼
┌─────────────────────────┐
│ NOV-12-2001 15:00       │
│                    nn%  │
└─────────────────────────┘
         │
         ▼
┌─────────────────────────┐
│ * DIALING *   NO.nnn    │
│ 212 555 1234            │
└─────────────────────────┘
```

Note:
1. After the received document file is successfully transmitted, unit will NOT delete the file automatically.
2. Under certain conditions there could be two (2) received files stored separately. In this case, transmission will be made separately.
3. Only normal received document will be transmitted. Document received with a confidential code will NOT be transmitted by this operation.
4. Documents received with a confidential code, can be retrieved by using Confidential Polling from a remote station.

6 System Description

6.1. Mechanical Operation

6.1.1. Transmit Mechanism

The Transmit Mechanism consists of components which feed, scan and eject documents, as well as send signals. These components and their functions are as follows:
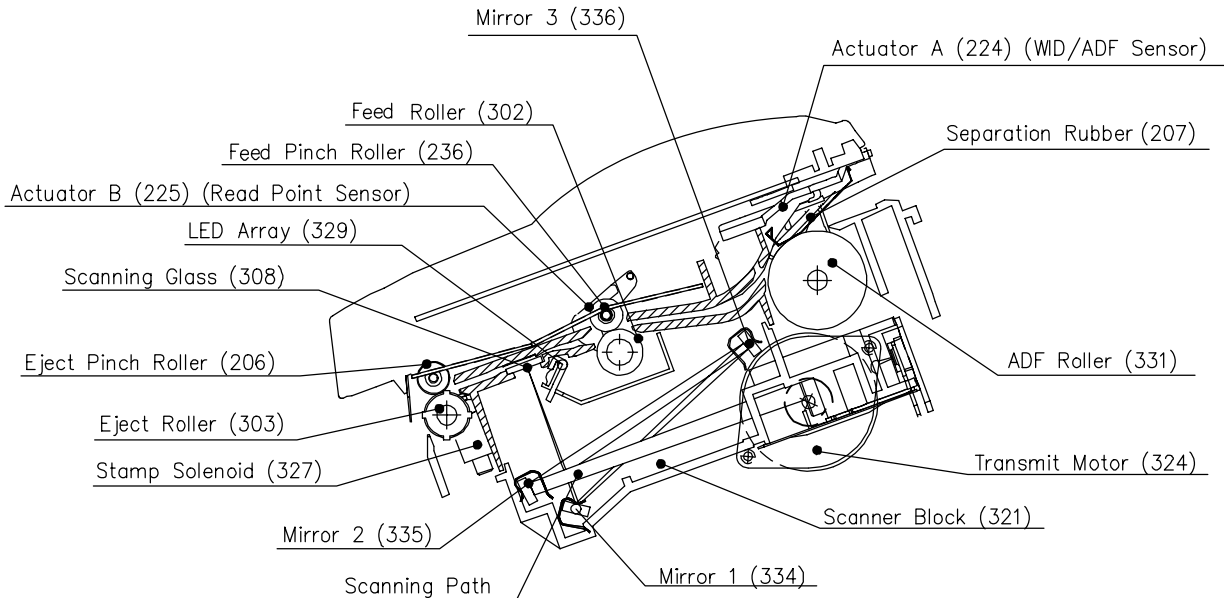
ADF Mechanism

The ADF (Automatic Document Feeder) automatically feeds paper into the unit, and consists of ADF Roller and Separation Rubber. Each document is placed face-down on the **Printer Cover** (106) before being fed into the unit.

● The **ADF Roller** (331) feeds individual pages into the scanning area.
● The **Separation Rubber** (207) separates documents placed on the ADF, preventing multiple feeding.

LED Array (329)

The UF-590/790 has one LED Array, used as a light source to illuminate the document. The LED Array turns ON when the Read Point Sensor is activated by the document leading edge.

Transmit Guide Unit

The Transmit Guide Unit is an auxiliary part used for feeding and ejecting documents. It consists of the **Transmit Guide** (301), **Control Panel Chassis** (201), **Feed Roller** (302), **Eject Roller** (303), and **Eject Pinch Roller** (206) and **Feed Pinch Roller** (236). This unit also provides the white scanning area and serves as a base for electronic white reference.

Transmit Mechanism Drive System

This system feeds documents through the transmitting mechanism, and consists of rollers, gears and a stepper motor.

● The **Transmit Motor** (324), a stepper motor, controlled by the CPU, drives the ADF Roller, Feed Roller and Eject Roller, with the speed based on the density of the picture information.
● The **Feed Roller** (302) feeds the document to the scanning point.
● The **Eject Roller** (303) feeds and ejects the document out of the machine.

Transmit Mechanism Sensors

The **ADF Sensor** (PC1), activated by **Actuator A** (224), detects the presence of documents on the ADF Tray and multiple pages.

The **RP (Read Point) Sensor** (PC3), activated by **Actuator B** (225), detects the lead and trail edges of the document, controlling the reading position. The CPU determines that a document is jammed if Actuator B is not tripped within a specified time after the ADF Roller starts feeding, and disengages the ADF Roller by reversing the Transmit Motor direction.

The **ADF Door Sensor** (PC2), activated by **ADF Door Actuator** (226), halts all scanning operations when the Control Panel Unit is opened.

Verification Stamp Unit

The Verification Stamp Unit stamps an "X" mark on the front of the document after the document is successfully transmitted or stored. It consists of the **Stamp Head** (325), **Stamp Holder** (326) and **Stamp Solenoid** (327).

Scanner Block (321)

The Scanner Block consists of three mirrors, a **Lens**, and a **CCD PC Board** (1014).
● The mirrors, **Mirror 1** (334), **Mirror 2** (335) and **Mirror 3** (336) reflect image information, in the form of light, through the Lens.
● The **Lens** focuses the image information and passes it to the CCD.
● The **CCD**, mounted on the CCD PC Board, converts the image information into an electronic signal.

Drive System

Eject Roller (303)   Feed Roller (302)   ADF Roller (331)

Document

B55D16 Gear (312)

ADF Gear (305)

D17 Gear (313)

D25F Drive Gear (332)

Transmit Motor (324)

D50 Gear (314)   B55D30 Gear (311)   B54B22 Gear (310)
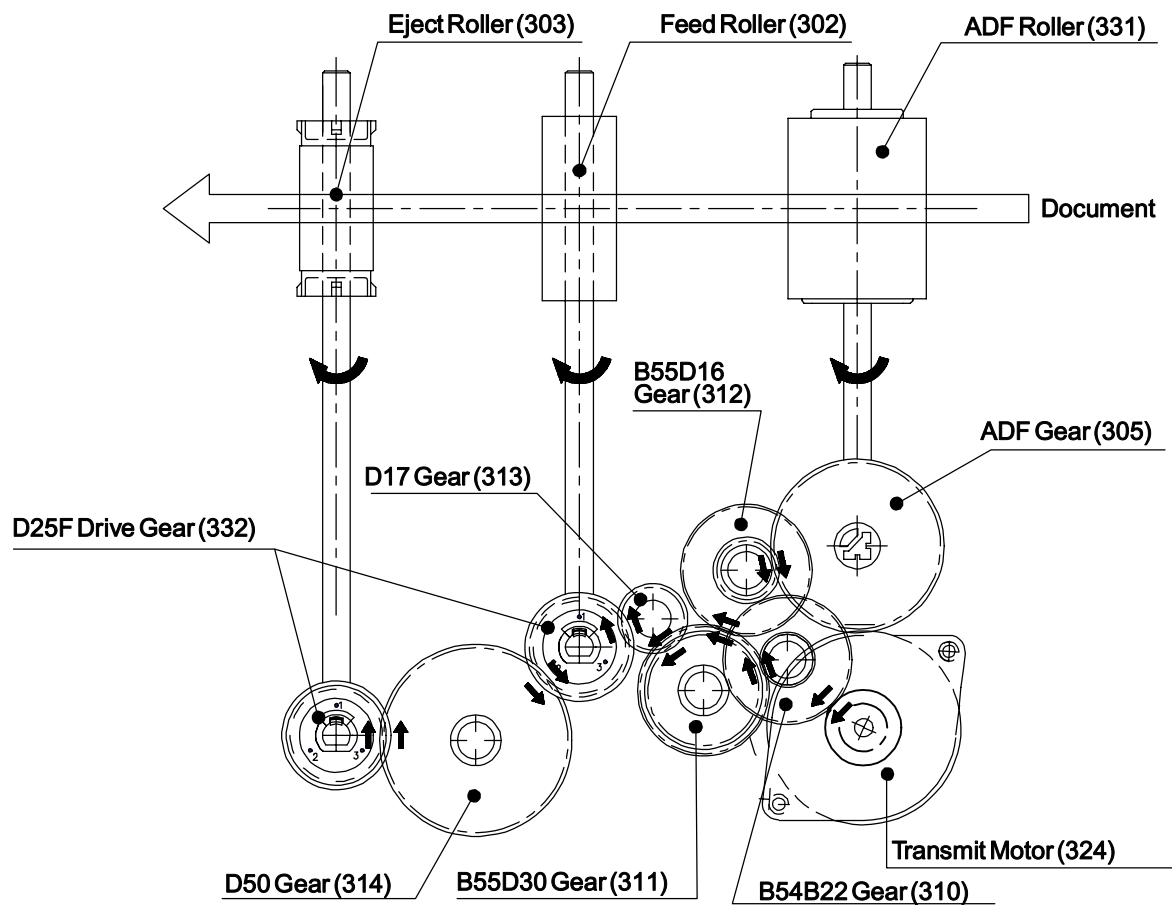
6.1.2   Control Panel

The Control Panel consists of the **PNL PC Board** (1004) and **LCD Unit**, which displays the various status messages, and a membrane-type panel.

6.1.3. Printing Mechanism

The Receive Mechanism consists of the Laser Unit (LSU), OPC (Organic Photo Conductor) Drum, and various other parts which ensure the normal feeding of recording paper. These components and their functions are as follows:
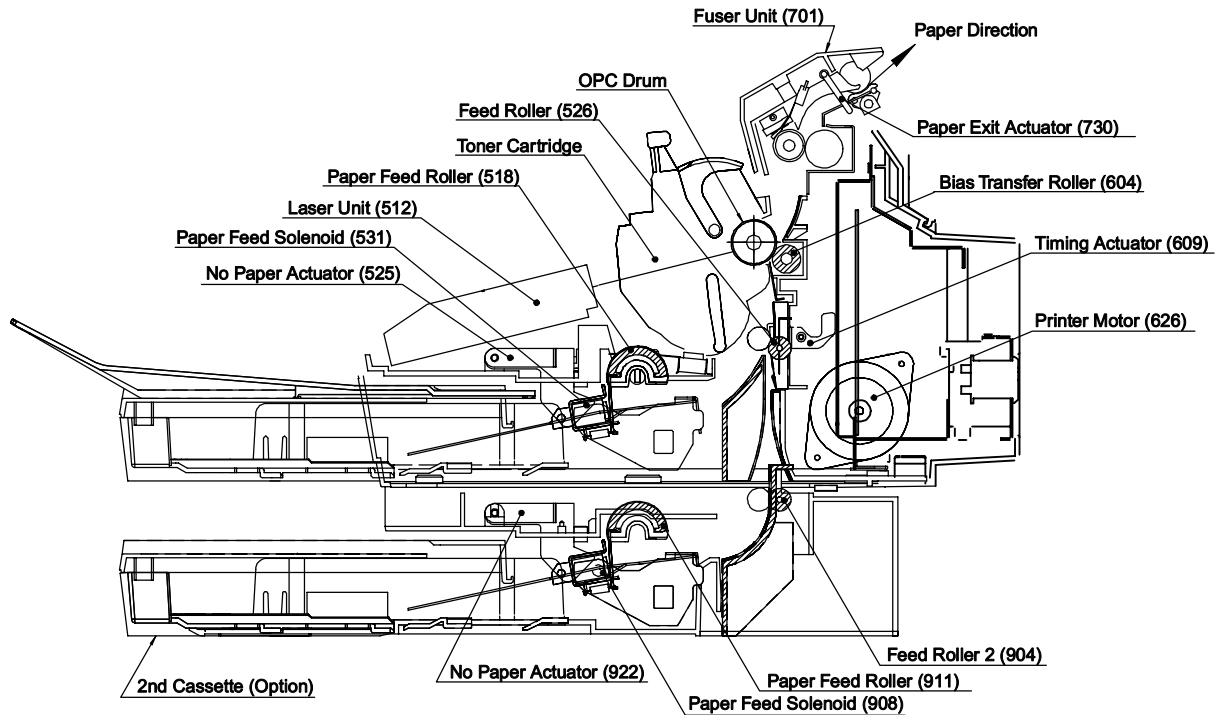
Paper Feed Units No.1 and 2

The Paper Feeder Unit No. 2 is available as an option.

Paper Feed Unit No.1 Operation

1. The printing operation begins when the nPRNT (Print Request) output signal level goes Low. The **Printer Motor** (626) is initialized.

2. The **Paper Feed Solenoid** (531) is energized for a specified period of time and turned ON. This activates the **Paper Feed Roller** (518), which rotates one revolution. The paper is separated into individual sheets by the **L** and **R Paper Separation Clips** (809 and 811) and transported to the **Feed Roller** (526).

3. After one revolution the **Paper Feed Roller** (518) stops, releasing the paper. The **Feed Roller** (526) transports the paper to the drum area.

4. The actual printing process starts at a specified time after the **Timing Actuator** (609) is activated and stops at a a specified period of time after the trailing edge clears the **Timing Actuator** (609).

Paper Feed Unit No. 2 (Optional) Operation

The Paper Feed Unit No.1 always takes priority. The Paper Feed Unit No. 2 becomes operational only when the cassette No.1 runs out of paper and the NP Sensor is deactivated, causing the nPCHK1 output signal level to go High.

1. The printing operation begins when the nPRNT (Print Request) output signal level goes Low. The **Printer Motor** (626) is initialized.

2. The **Paper Feed Solenoid** (908) is energized for a specified period of time and is turned ON. This activates the **Paper Feed Roller** (911), which rotates one revolution. The paper is separated into individual sheets by the **L** and **R Paper Separation Clips** (809) (811) and transported to the **Feed Roller 2** (904).

3. After one revolution the **Paper Feed Roller** (911) stops, releasing the paper. The **Feed Roller 2** (904) and the **Feed Roller** (526) transports the paper to the drum area.

4. The actual printing process starts at a specified time after the **Timing Actuator** (609) is activated and stops at a a specified period of time after the trailing edge clears the **Timing Actuator** (609).
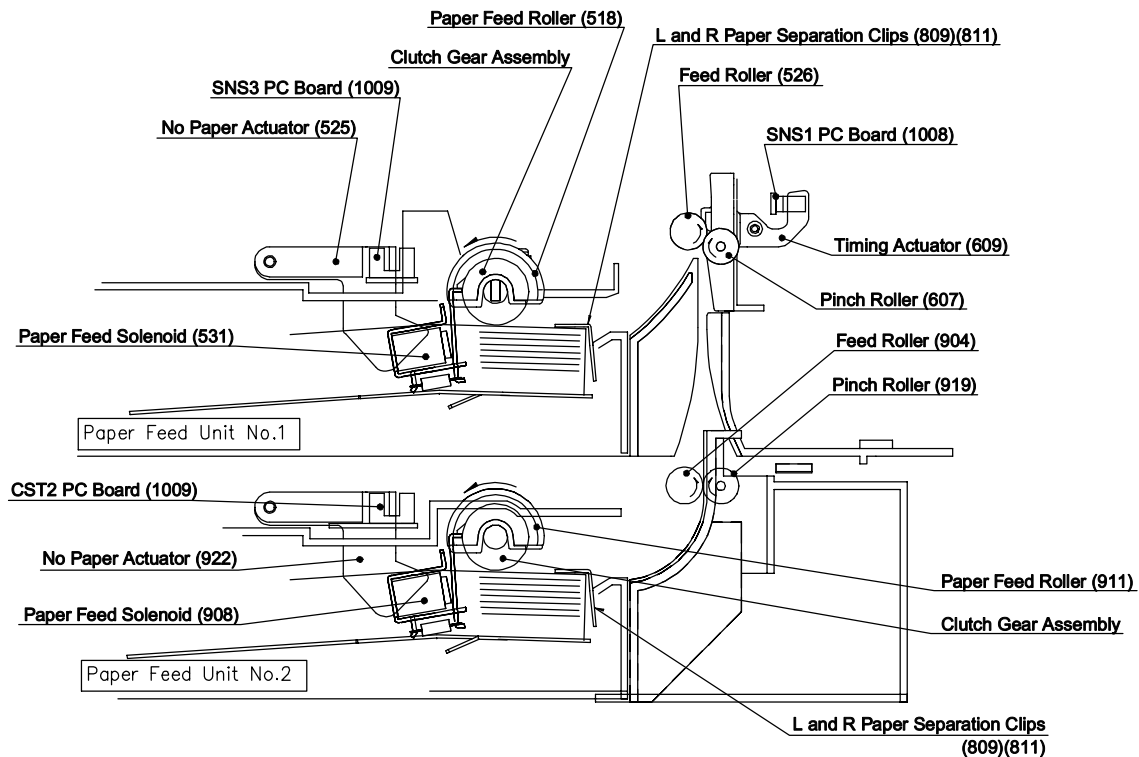
6.1.4. Printing Process Operation

Labels: Handle, Toner Waste Box, Waste Toner, Cleaning Blade, Bias Transfer Roller, OPC Drum, Laser Beam, Development Roller, Developing Blade, Toner, Agitator Sweeper, Hopper, Mixing Blade
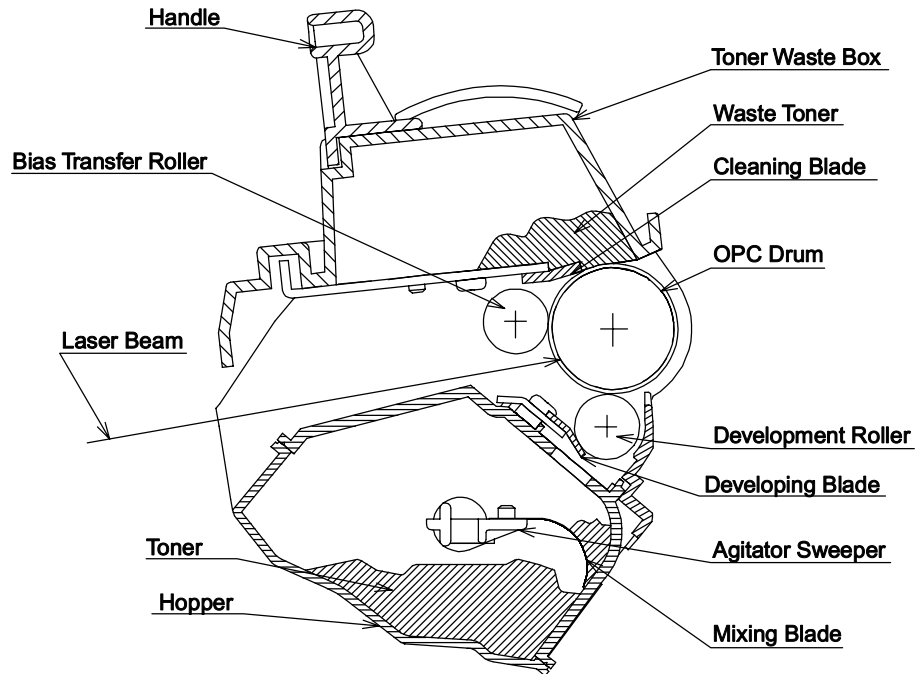
Charge

In the dark, the Bias Charge Roller (BCR) applies a high, uniform negative charge to the surface of the OPC Drum. The surface potential is approximately -650 VDC and remains because the drum has a high electric resistance in the dark.

Exposure

A portion of the laser beam is deflected to the timing sensor [Beam Detection (BD) Sensor], which controls the start timing of scanning on the OPC Drum. The CPU also uses the timing sensor to detect abnormal signals. The light beam from the laser diode is modulated by the digital signal (nVIDEO) and converted to parallel light waves by the collimator lens. The beam is then directed to the rotating tetragon mirror, where it is reflected to the f-θ lens and then focused onto the OPC Drum surface. The laser beam moves across the surface of the OPC Drum in the scanning direction. Where the laser beam is applied, the negative charge on the drum dissipates, and where the laser is not applied, the negative charge remains. This action forms a latent, electrostatic image on the OPC Drum, corresponding to the original image.

Development

This development process uses a conventional method, where toner coats a Development Roller and transfers to the latent image on the OPC Drum. In the Toner Cartridge, the (mono-component) toner is negatively charged by the friction between the rotating Development Roller (Mag Roller) and the Developing Blade. This combination and the rotation of the Mixing Blade transfers the toner from the reservoir and forms a brush effect on the Mag roller. Where the magnetic brush lightly touches the OPC Drum, the negatively charged toner is attracted to the latent image on the drum, forming a mirror image of the original on the drum. Any remaining toner is removed from the Mag Roller by the Developing Blade and is recycled back into the toner reservoir. A bias voltage of approximately 1.65 kVACp-p at 1.875 kHz, riding on a -300 VDC bias is applied to the magnetic brush to achieve maximum print quality.

The **Toner Sensor** (513), a magnetic sensor, detects the remaining quantity of toner in the Toner Cartridge. When the "TONER" lamp starts to blink, there is still enough toner left in the cartridge to print 100 pages (based on ITU-T Image No.1). When the toner runs out, the display will show: "OUT OF

TONER & INFO CODE 041" and the machine is disabled from printing any copies.

The **Toner Cartridge** consists of OPC Drum, Bias Charge Roller, Development Roller, Developing Blade, Cleaning Blade, Mixing Blades and Toner Waste Box. The **OPC Drum** is an aluminum cylinder coated with an OPC (Organic Photo Conductor) sensitive material. This surface is photoelectric (retains the charge in the dark and releases the charge in the light). The potential differences on the surface (a static latent image) form a printed image. The **Bias Charge Roller** provides a uniform charge on the OPC Drum surface. The **Development Roller** supplies toner to the drum by rotating over the magnet. The **Developing Blade** evens the toner on the Development Roller surface and also charges the toner by friction. The **Cleaning Blade** cleans by scraping the remaining toner off the OPC Drum surface after transfer.

Transfer and Separation

As the paper is fed between the OPC Drum and the **Bias Transfer Roller (BTR)** (604), a positive charge of approximately +3.0 μA steady current is applied to the backside of the paper by the BTR. The toner particles are attracted away from the drum towards the surface of the paper. During cleaning, the BTR is charged to approximately -1500 VDC to repel toner on the OPC Drum and prevent toner from being attracted to the BTR. After transfer has occurred, the paper passes over the **Discharge Plate** (612) in the **Transfer Guide** (601), reducing the difference of potential between the OPC Drum and the paper. The stiffness of the paper causes the paper to separate from the drum.

Cleaning

After transfer, some toner may remain on the surface of the OPC Drum. A Cleaning Blade scrapes the OPC Drum surface, and the removed toner is moved into the Toner Waste Box, inside the Toner Cartridge.

Laser Unit
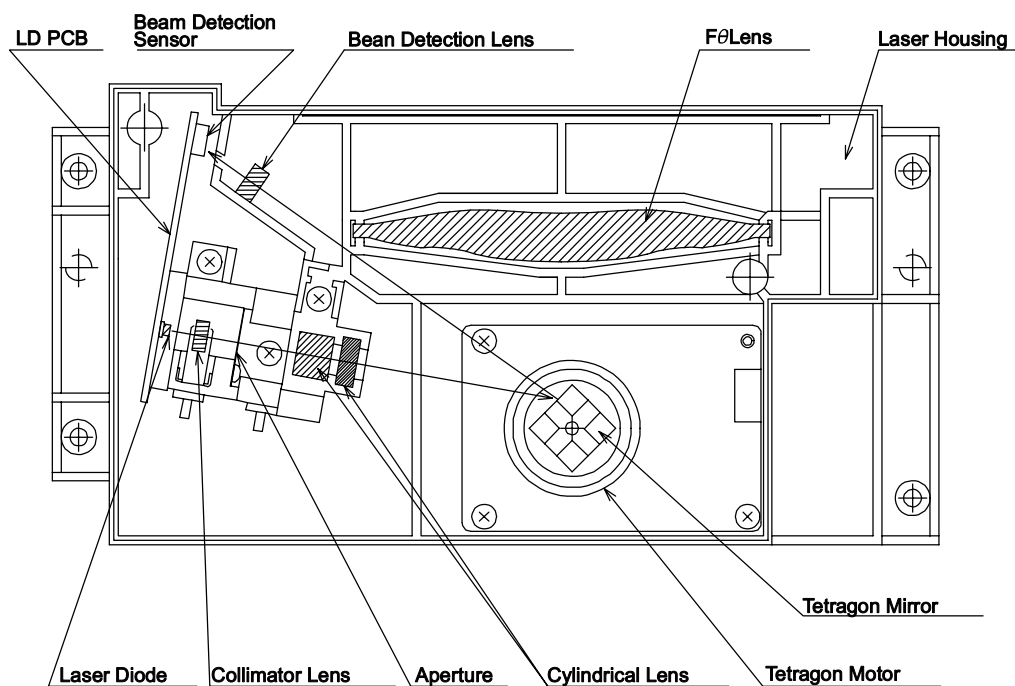
Laser

A 5 mW Laser Diode, with a wave length of 780 nm (±20 nm), provides a modulated beam controlled by nVIDEO. The beam power on the drum surface is approximately 0.15 mW, and is controlled by the

monitor circuit.

Collimator Lens

This lens converges and focuses the laser beam, converting it to parallel light.

Aperture

This controls the size of the laser beam.

Tetragon Mirror and Motor

The tetragon scanner consists of a 4-sided mirror, directly driven by a tetragon motor, revolving at 8,898 rpm (400 dpi) or 13,347 rpm (600 dpi). Scanning speed for 400 dpi and 600 dpi are controlled by motor clock supplied from SC PCB. Motor clock for 400 dpi is 890 Hz and 600 dpi is 1,335 Hz. The laser beam is reflected against these mirrors and swept over the recorded width in the scanning direction. This unit features a stable line scanning speed, a precision mirror reflection angle, a reflection free surface, and instant start.

Beam Detection (BD) Lens and Beam Detection (BD) Sensor

The BD Lens receives the reflected light from the Polygon Mirror and redirects it into the BD Sensor, which converts the laser beam into electrical signals and sets the start timing for the scanning line.

f-θ Lens

This amorphous plastic, molded lens is designed to provide parallel laser light across the surface of the drum, providing a constant scanning speed.

Fusing and Paper Exit

Fuser Unit (701)
Exit Roller (719)
Thermistor Assembly (728)
Thermal Fuse (726)
Paper Exit Actuator (730)
Thermostat (725)
Fuser Roller (709)
Fuser Lamp (732)
Pressure Roller (706)
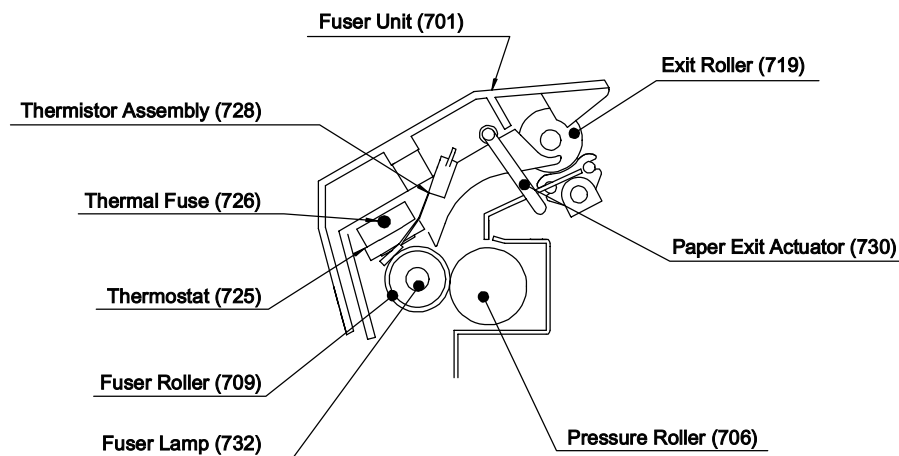
Fuser Unit (701)

The Fuser Unit, consisting of the Fuser Lamp, Fuser Roller, Pressure Roller, Thermistor, and Thermostat, bonds the toner into the paper using heat and pressure.

Fuser Lamp (732)

Located in the Fuser Roller is a Halogen lamp that serves as the heat source for the Fuser Roller.

Fuser Roller (709)

A Teflon coated roller supplies the heat for bonding the toner to the paper. The temperature of the surface is kept constant at approximately 160°C (±5°C) or (320°F).

Pressure Roller (706)

This converted PFA tube Silicon Rubber Roller applies pressure to the Fuser Roller, assisting in bonding the toner to the paper.

Thermistor Assembly (728)

The Thermistor, a heat sensitive resistor, in contact with the Fuser Roller, monitors the surface temperature. The temperature detected is used to control the ON/OFF switching of the Fuser Lamp. It also acts as the primary overheat prevention device. A comparator circuit on the FCB PC Board acts as a secondary overheat protection and becomes active at approximately 185°C (365°F).

Thermostat (725)

A Thermostatic Fuse, part of the power line for the Fuser Lamp, provides an extra overheat protection by opening when the Fuser Roller surface temperature reaches approximately 200°C (392°F) and remains there for 1 minute. If the primary and secondary overheat protection does not halt the rise in temperature, the thermostat opens, removing power from the Fuser Lamp. When the Thermostat opens, it must be replaced.

SNS4 PC Board (1007) [Paper Exit Sensor]

This sensor detects the presence of printed paper at the exit. If no paper passes, or if paper is over the sensor too long, a "RECORDING PAPER JAM" message is displayed. When paper passes over the sensor, the output is Low (Low Active).
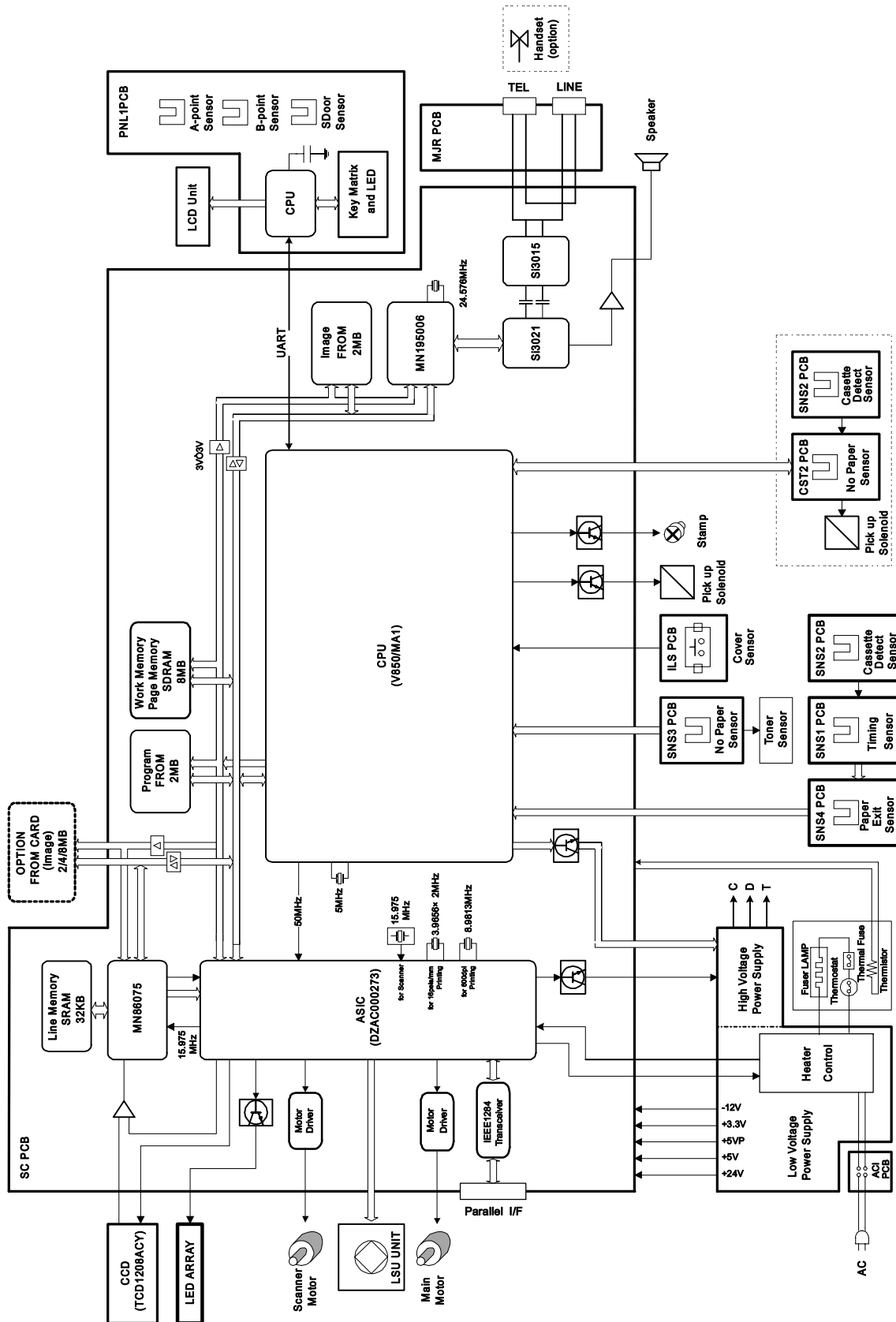
Thermal Fuse (726)

It is placed in series with the Thermostat on the power line of the Fuser Lamp and performs the tertiary overheating prevention (in case the Thermostat fails) by opening when the surrounding temperature reaches approximately 216°C (420.8°F).
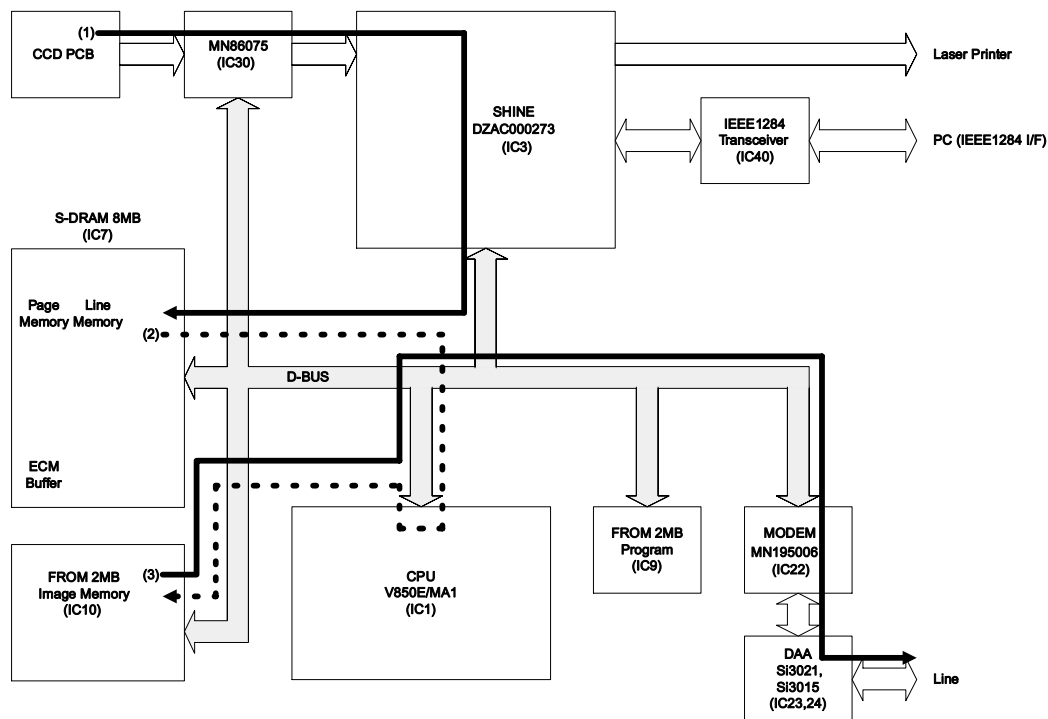
6.1.5   Covers and Enclosures

The **Printer Cover** (106) contains the **R and L Document Guides** (107 and 108), which adjust to the paper width to properly feed the original documents. The **Left Cover** (103) has a **Speaker** (117) mounted inside and shields the circuit boards. The **Rear Cover** (105) contains the **Recording Paper Tray** (111) and **Recording Paper Sub Tray** (112), used to support legal size documents.

6.2. Electrical Circuit Explanation
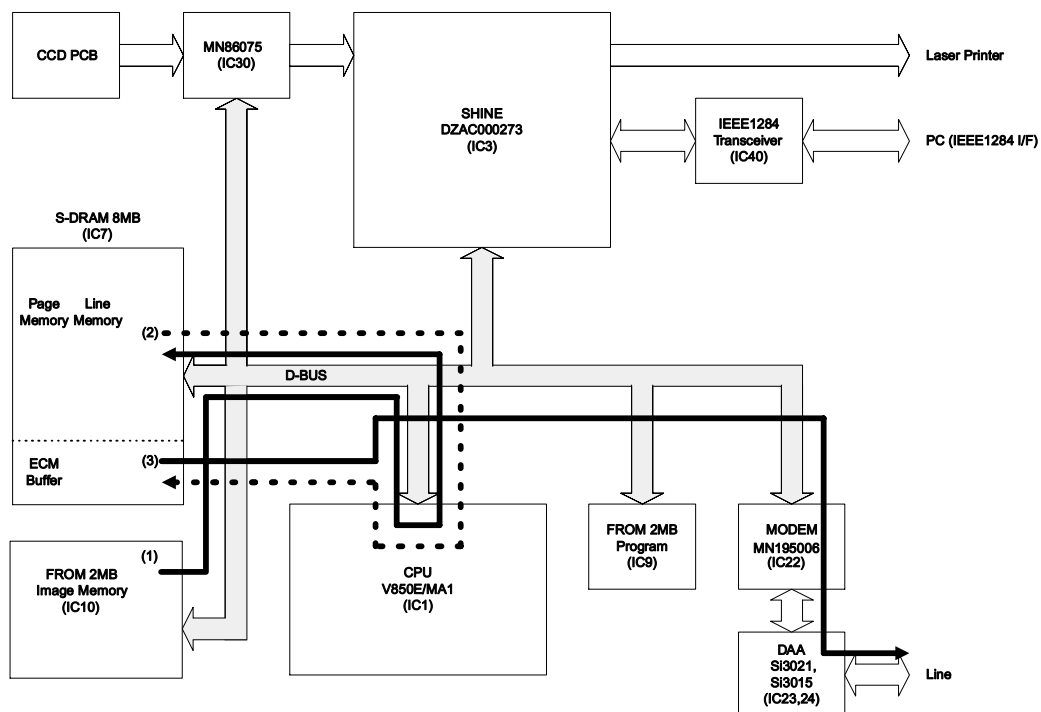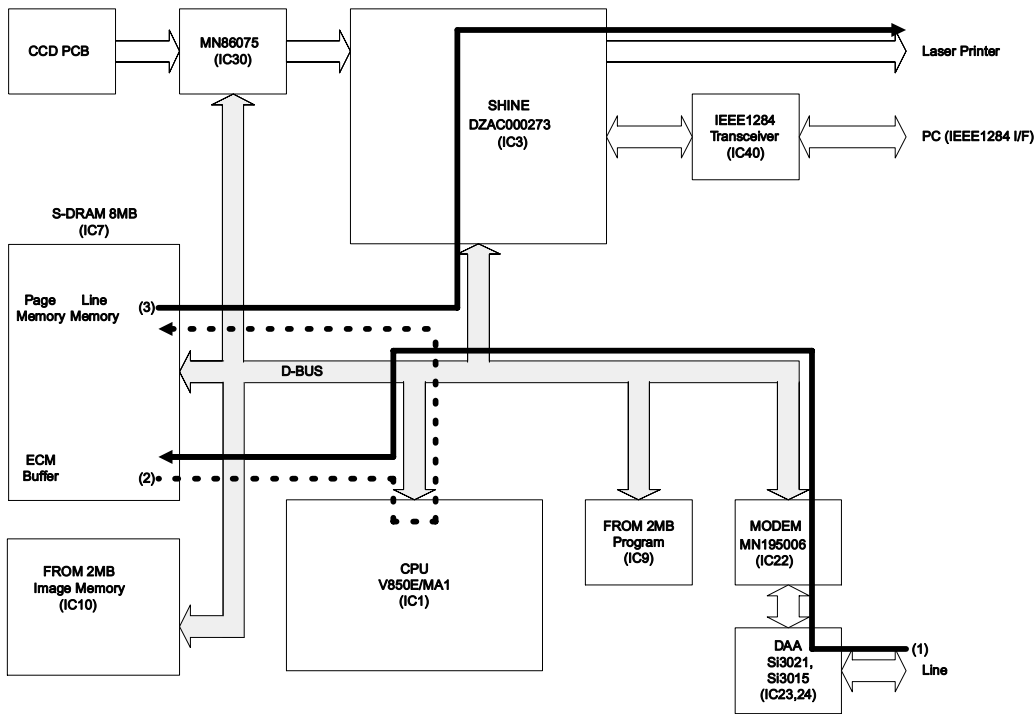
6.2.1. Fax Block Diagram

Handset (option)

TEL   LINE

Speaker

PNL1PCB

A-point Sensor
B-point Sensor
SDoor Sensor

MJR PCB

LCD Unit

CPU

Key Matrix and LED

SI3015

SI3021

24.576MHz

Image FROM 2MB

MN195006

UART

3V/3V

SNS2 PCB
Cassette Detect Sensor

CST2 PCB
No Paper Sensor

Pick up Solenoid

CPU (V850/MA1)

Stamp

Pick up Solenoid

ILS PCB
Cover Sensor

SNS2 PCB
Cassette Detect Sensor

SNS3 PCB
No Paper Sensor

Toner Sensor

SNS1 PCB
Timing Sensor

Work Memory Page Memory SDRAM 8MB

Program FROM 2MB

SNS4 PCB
Paper Exit Sensor

OPTION FROM CARD (Image) 2/4/8MB

50MHz

5MHz

16.975 MHz

3.9656× 2MHz for 16pel/mm Printing

8.9813MHz for 600dpi Printing

C D T

High Voltage Power Supply

Fuser LAMP
Thermostat
Thermal Fuse
Thermistor

Heater Control

Line Memory SRAM 32KB

MN86075

ASIC (DZAC000273)

IEEE1284 Transceiver

Low Voltage Power Supply

-12V
+3.3V
+5VP
+5V
+24V

ACI PCB

SC PCB

15.975 MHz

Motor Driver

Motor Driver

Parallel I/F

AC

CCD (TCD1208ACY)

LED ARRAY

Scanner Motor

LSU UNIT

Main Motor

6.2.2. Signal Routing
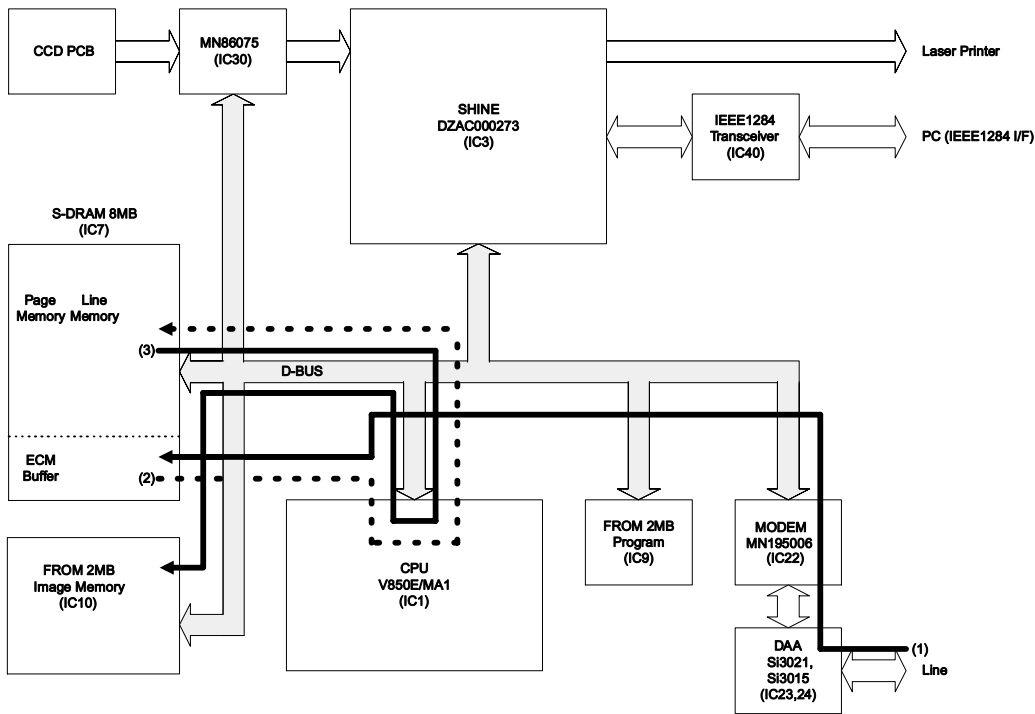### 1. ADF Transmission

2. Memory Transmission

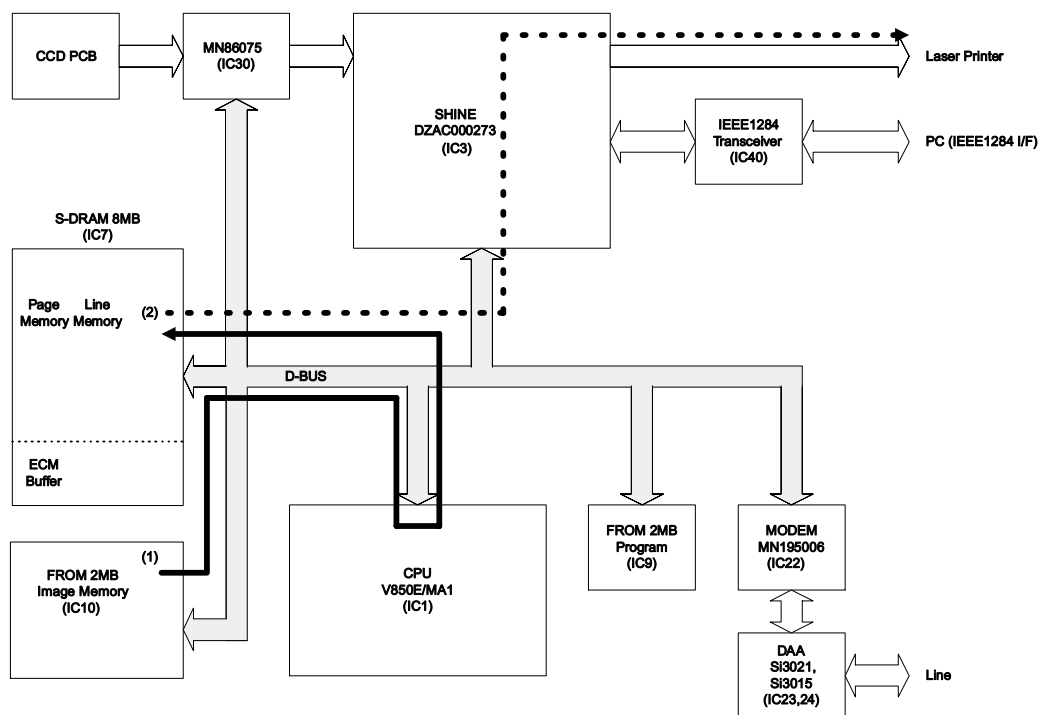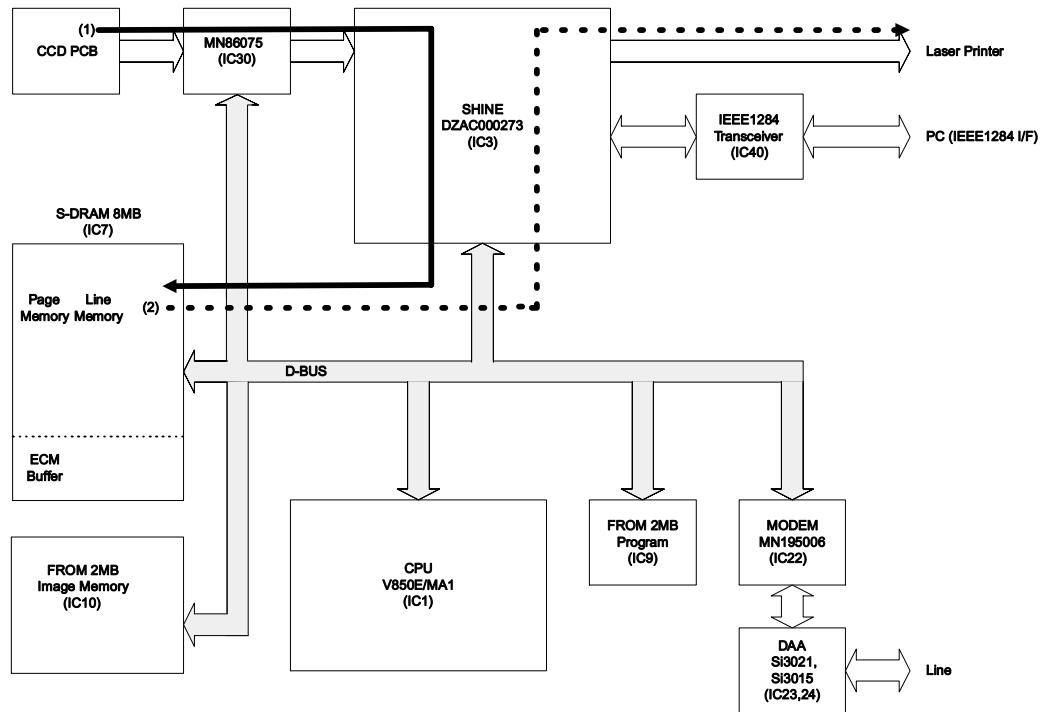## 3. Direct Reception

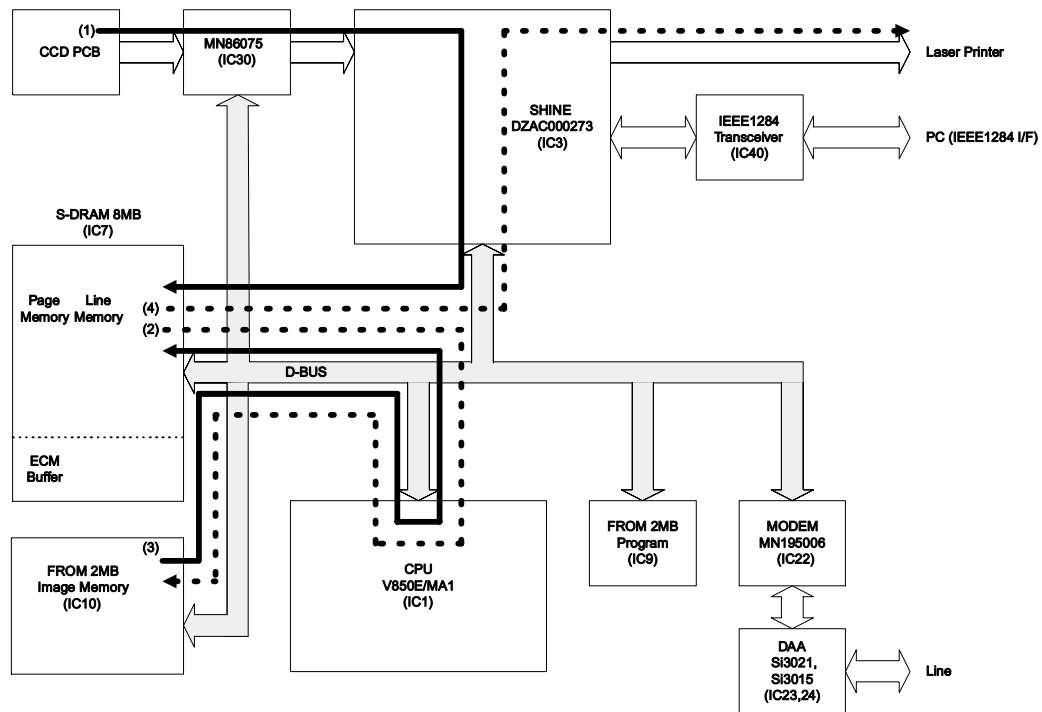## 4. Memory Reception

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5. Scan into Memory

(1) CCD PCB	MN86075 (IC30)

SHINE DZAC000273 (IC3)

Laser Printer

IEEE1284 Transceiver (IC40)

PC (IEEE1284 I/F)

S-DRAM 8MB (IC7)

Page Memory   Line Memory   (2)

D-BUS

ECM Buffer

FROM 2MB Image Memory (IC10)

CPU V850E/MA1 (IC1)

FROM 2MB Program (IC9)

MODEM MN195006 (IC22)

DAA Si3021, Si3015 (IC23,24)

Line

6. File Print from Memory

CCD PCB

MN86075 (IC30)

SHINE DZAC000273 (IC3)

Laser Printer

IEEE1284 Transceiver (IC40)

PC (IEEE1284 I/F)

S-DRAM 8MB (IC7)

Page Memory   Line Memory   (2)

D-BUS

ECM Buffer

FROM 2MB Image Memory (IC10)   (1)

CPU V850E/MA1 (IC1)

FROM 2MB Program (IC9)

MODEM MN195006 (IC22)
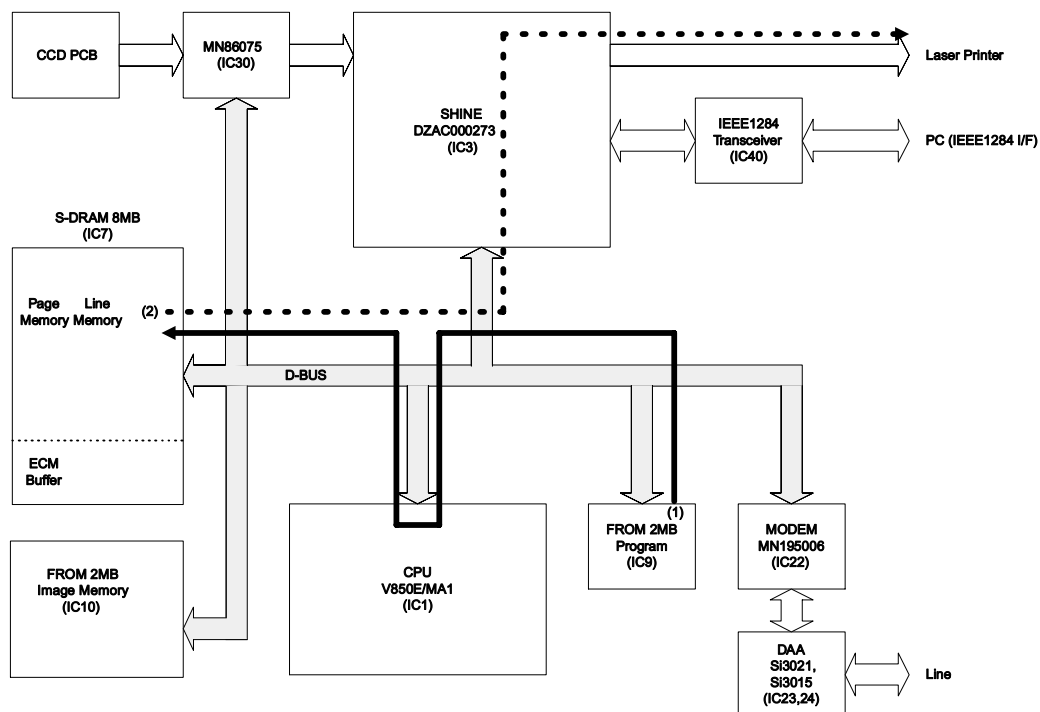
DAA Si3021, Si3015 (IC23,24)
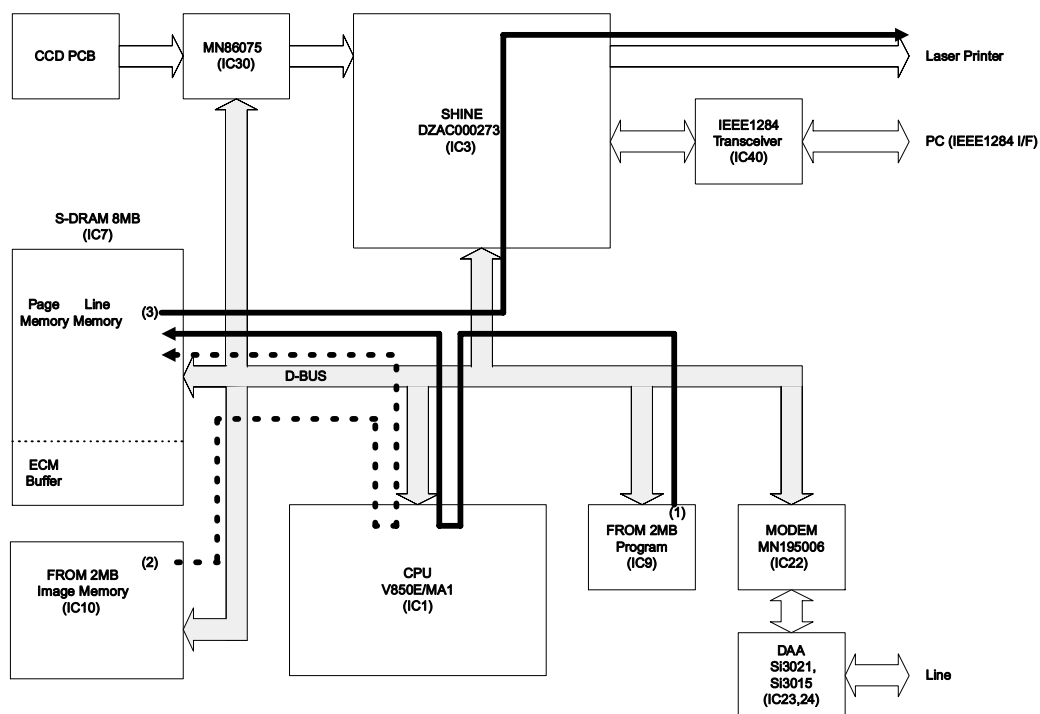
Line

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7. Single Copy
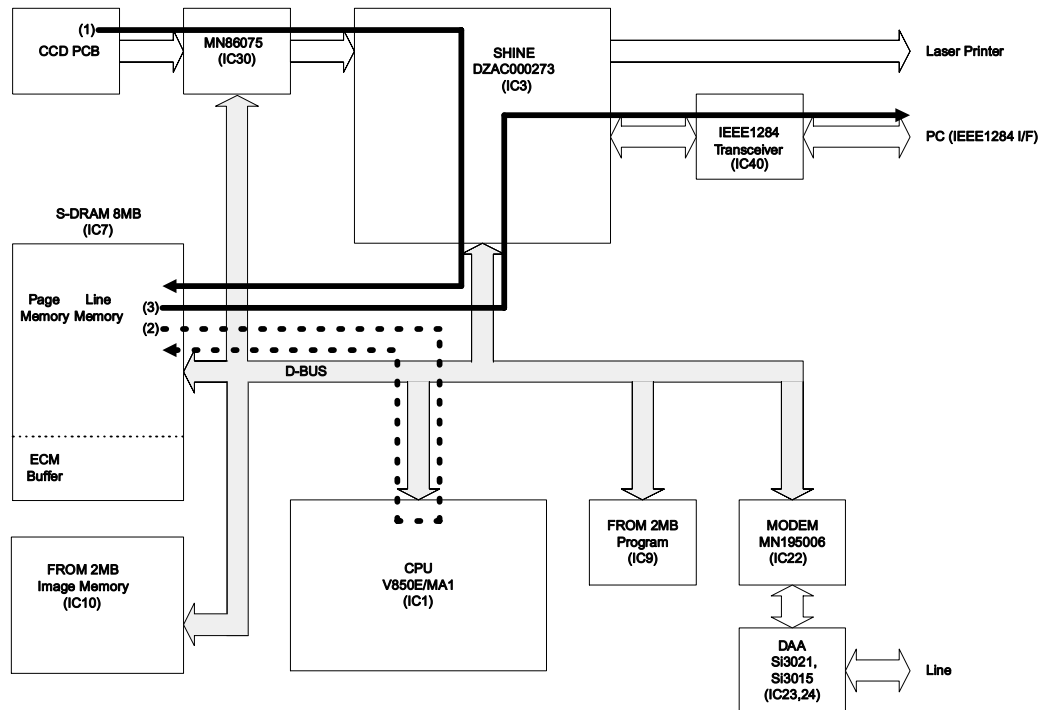

8. Multiple Copies

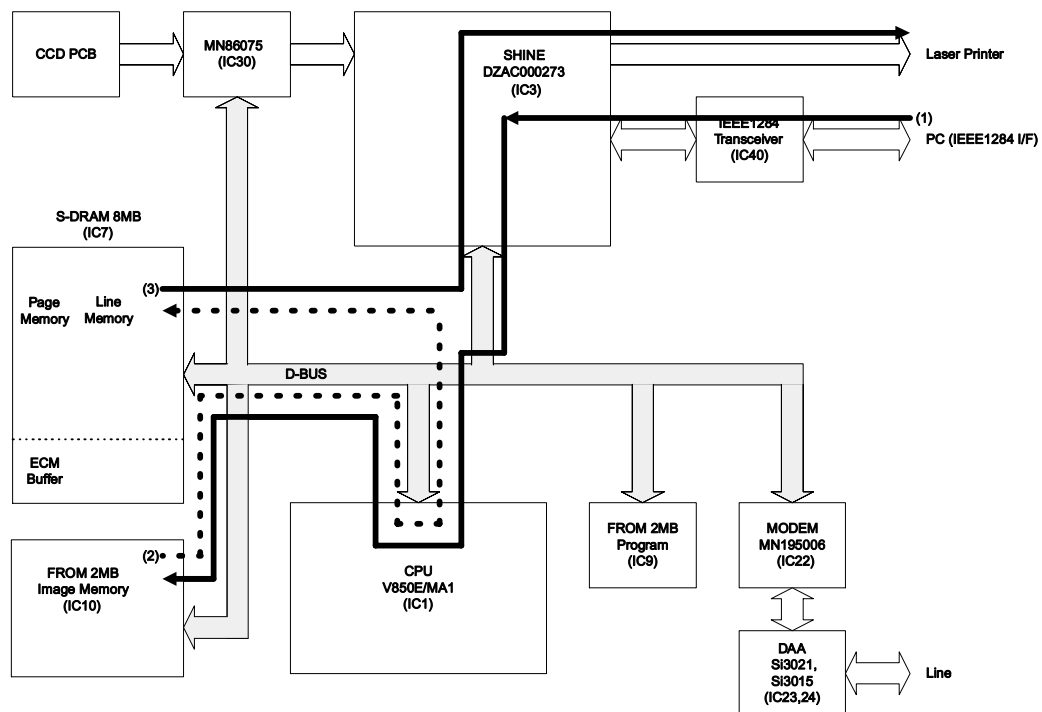## 9. Report/List Printing

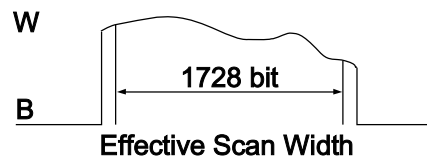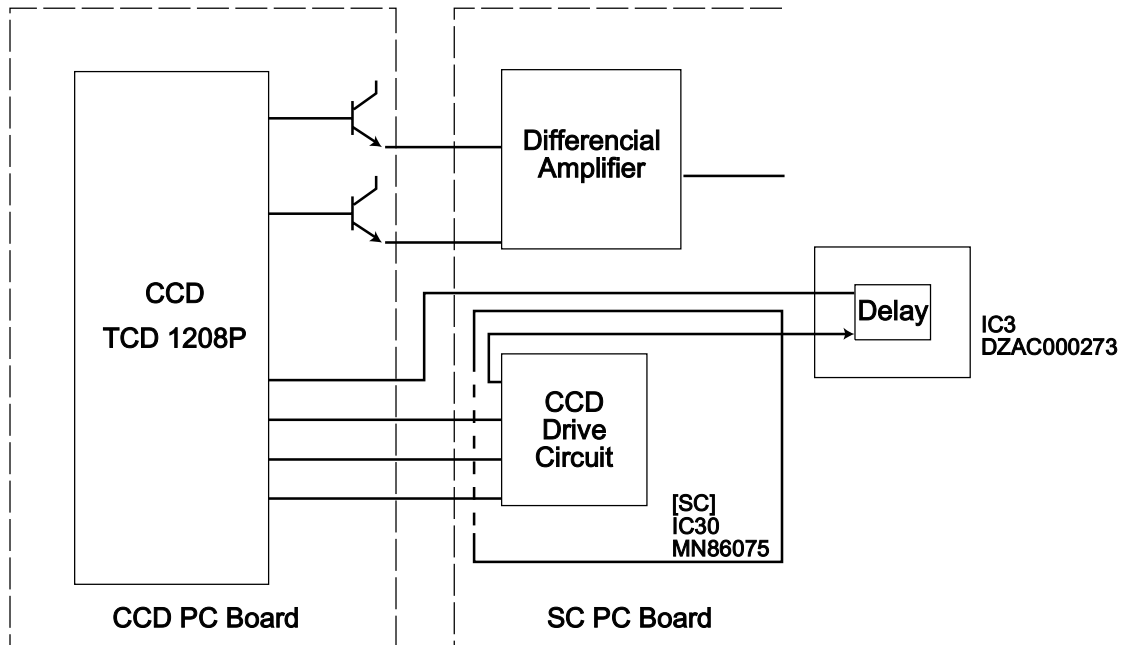## 10. Report with Image Data

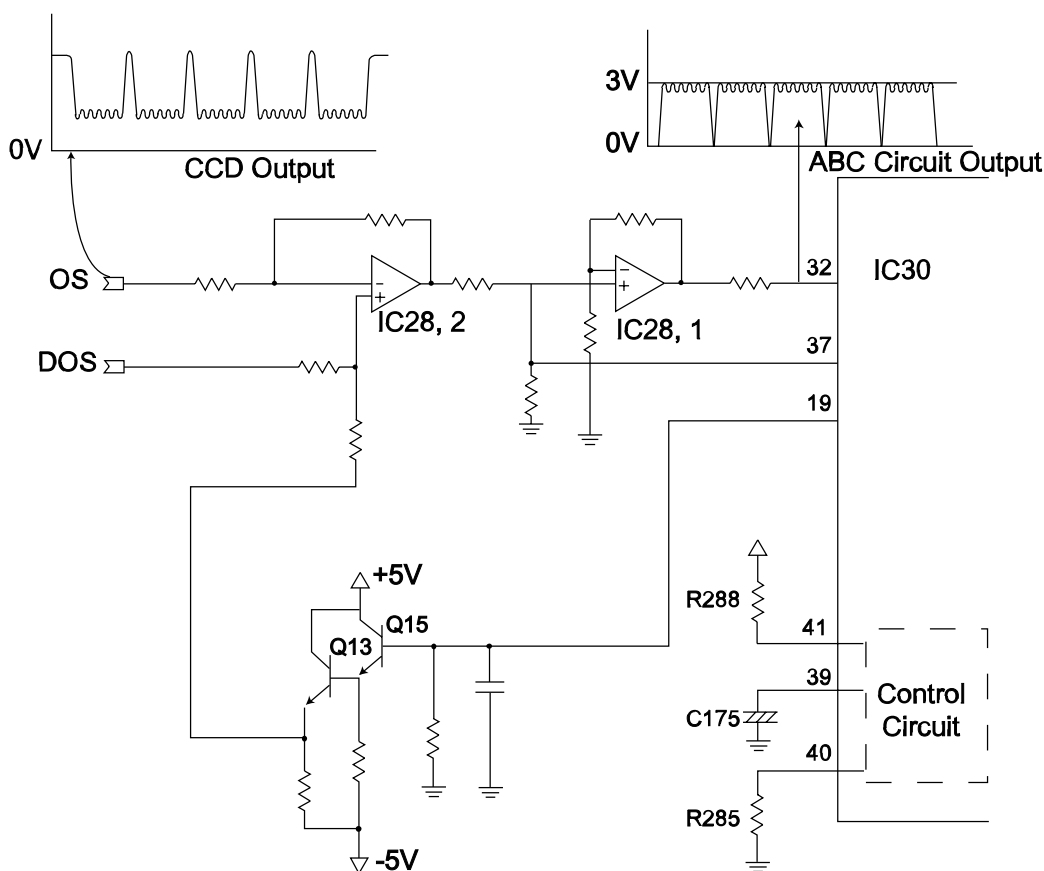## 11. PC Scanning Mode

12. Printer I/F

6.2.3   Picture Signal Scanning Block

The image data read by the optical unit is input to the CCD mounted on the CCD PC Board, then transferred to the SC PC Board after the optical information is converted into an electrical signal by the CCD. The following shows a block diagram of the picture signal scanning circuit. This picture signal scanning circuit consists of (1) ABC circuit, (2) shading correction circuit, (3) offset control circuit, (4) picture signal binary coding correction circuit and (5) reducing circuit.

```
                                          ┌──────────────┐
                                          │ Differencial │
                                          │ Amplifier    │
                                          └──────────────┘

   ┌──────────┐                    ┌────────┐
   │          │                    │ Delay  │  IC3
   │   CCD    │                    └────────┘  DZAC000273
   │ TCD 1208P│            ┌──────────────┐
   │          │            │ CCD          │
   │          │            │ Drive        │
   │          │            │ Circuit      │
   │          │            │       [SC]   │
   │          │            │       IC30   │
   │          │            │       MN86075│
   └──────────┘            └──────────────┘

      CCD PC Board             SC PC Board
```

W

1728 bit

B

Effective Scan Width

ABC Circuit

This circuit consists of IC28, IC30, C175, R288 and R285. Its function is to prevent deterioration of picture quality due to dirt on the document or degrading of the luminous energy of the Xenon Lamp light source. The picture signal from the CCD is amplified in IC28 and input to IC30, where it is converted from analog to digital and the shading is corrected. When the signal exceeds +5V as the result of this amplification and correction, capacitor C175 is charged through R288. This charging voltage lowers the level of the picture signal input to IC28. When the picture signal voltage rises, this charge voltage becomes higher. When the picture signal level lowers due to the background color, etc., of a transmitting document, the voltage of the charged capacitor C175 is discharged through R285. Consequently, the output of the ABC circuit is kept constant to maintain the picture quality, regardless of changes in the CCD output level.

CCD Output

0V

OS

DOS

IC28, 2

IC28, 1

3V

0V

ABC Circuit Output

32   IC30

37

19

+5V

Q15

Q13

-5V

R288

41

39

C175

40

R285

Control
Circuit

Shading Correction Circuit

The Shading Correction Circuit, included in IC30, is provided to correct for reduction in LED lamp intensity around the optical lens and LED lamp intensity distortion due to shading of each bit. This circuit scans the white reference on the transmitting document plate immediately before the document reaches the scanning position and writes a compensation value according to the distortion of the waveform, at the time, into the S-RAM (IC31).When the actual picture signal is input, the circuit corrects the picture signal shading, according to this compensation value. This shading is carried out for each page during transmission or copy.

Offset Control Circuit

The Offset Control Circuit consists of Q15, Q13, IC30 and IC28, and controls the black level of the CCD output to be at 0V by using the input.

Picture Signal Binary Coding Correction Circuit

The Picture Signal Binary Coding Correction Circuit is included in IC30. It is used to obtain a binary coding signal which is a corrected picture and error diffused signal of a false halftone signal, which is detected from a shaded picture signal.

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6.2.4   CCD Drive Clock Generator Circuit

This circuit is also contained in IC30. Its function is to generate FSG, FCK1, FCK2 and RS clock signals, which are required for driving the CCD. These clock signals are generated by the system clock generator circuit derived from the 4 MHz clock signal that is input to IC30. Its timing chart is shown below.The FR clock supplied to the CCD is output from the RS of IC3. The RS clock of IC3 is derived from the FR clock of IC30 [MN86075] generates the timing of the RS clock to drive the CCD.
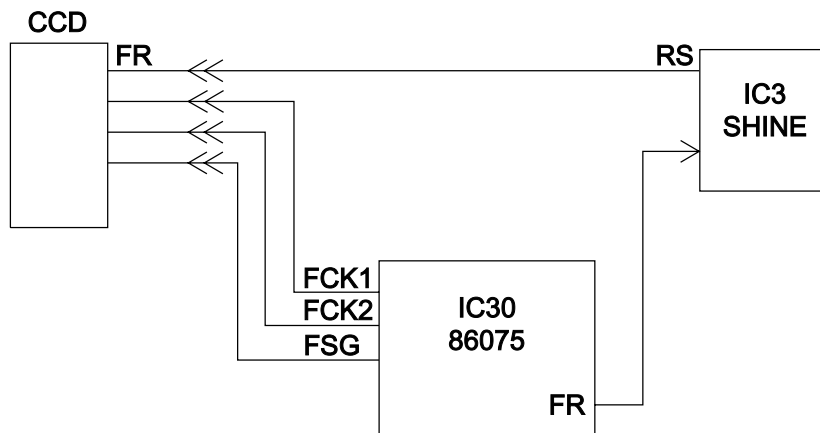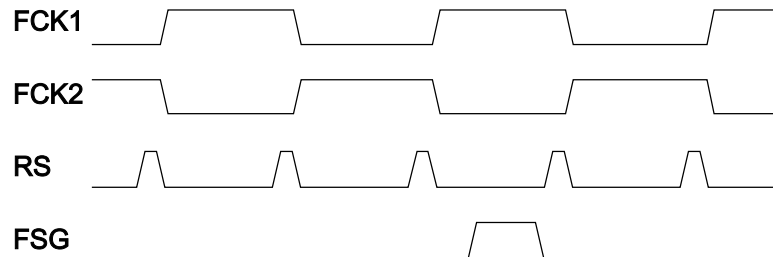
6.2.5   Line Monitor Circuit

The Line Monitor Circuit consists of an operational DAA (The secondary side chip) and its peripheral
circuits. Its function is to monitor the dial tone, DTMF tone, response signals, etc. over the speaker. It also
sounds the output of the key touch tones, alarm tones, etc. from the panel CPU over the speaker. The
Received Signals are output from DAA of Secondary circuit, and through Analog AGC, Electronic Volume,
Amplifier and over the speaker.
The monitor tone from the phone line and the buzzer tone from the panel can be adjusted from the Control
Panel.
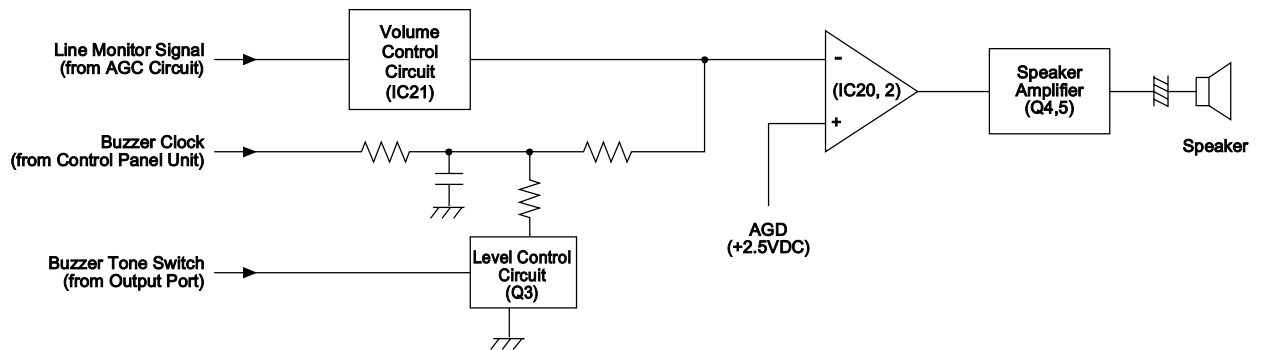
Line Monitor Circuit
Block Diagram

6.2.6   Transmit Motor Control Circuit

The transmit motor is a PM type, two-phase bi-polar motor. The stepping signal and chopping current control signals (pTAPH, pTBPH, pTA10, pTA11, pTB10 and pTB11) are sent to the chopper drive circuit, comprised of IC36, IC37 and its peripheral circuitry, from IC3 SHINE output port. The motor is powered by +24 VDC and is driven by a 1/2-phase excitation, and greater step division is provided by controlling the phase circuit in steps (micro-step control).
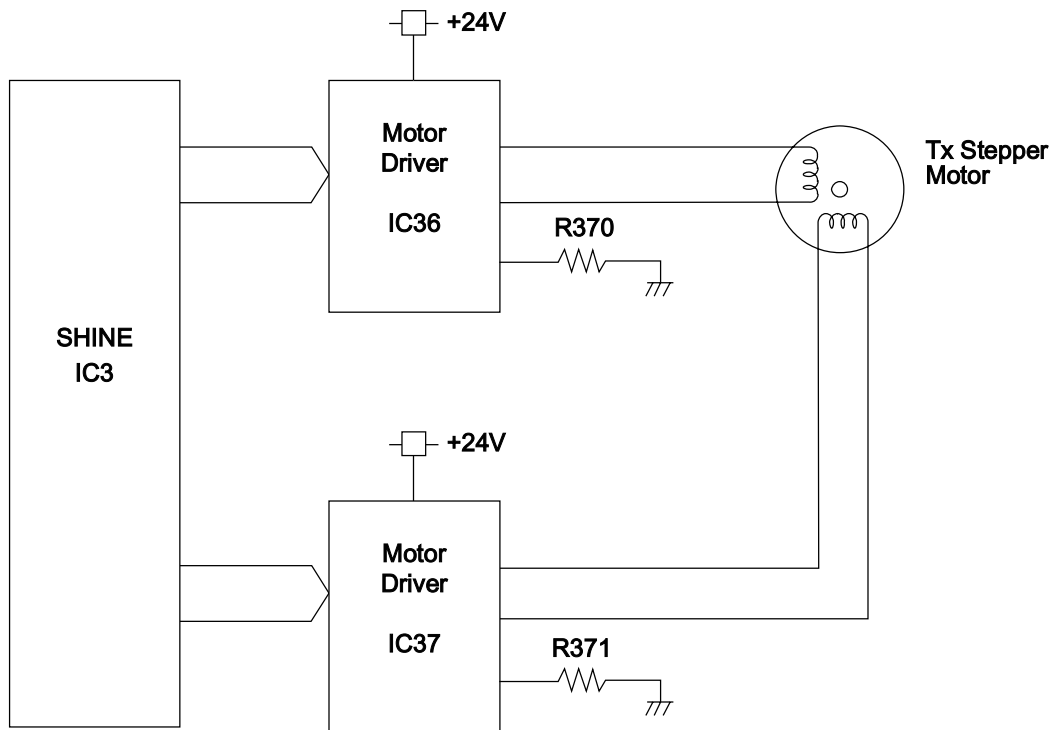
Tx Motor Driver Circuit Block Diagram

6.2.7 Line Control Circuit

The Line Control Circuit consists of CML relay, DP circuit, DAA (Direct Access Arrangement), Ring Detect Circuit for power-save and DC hold circuit. A Jack for an external telephone, which can be used for either an external telephone or an optional Handset Kit. The block diagram of the Line Control Circuit is shown below.

Line Control Circuit
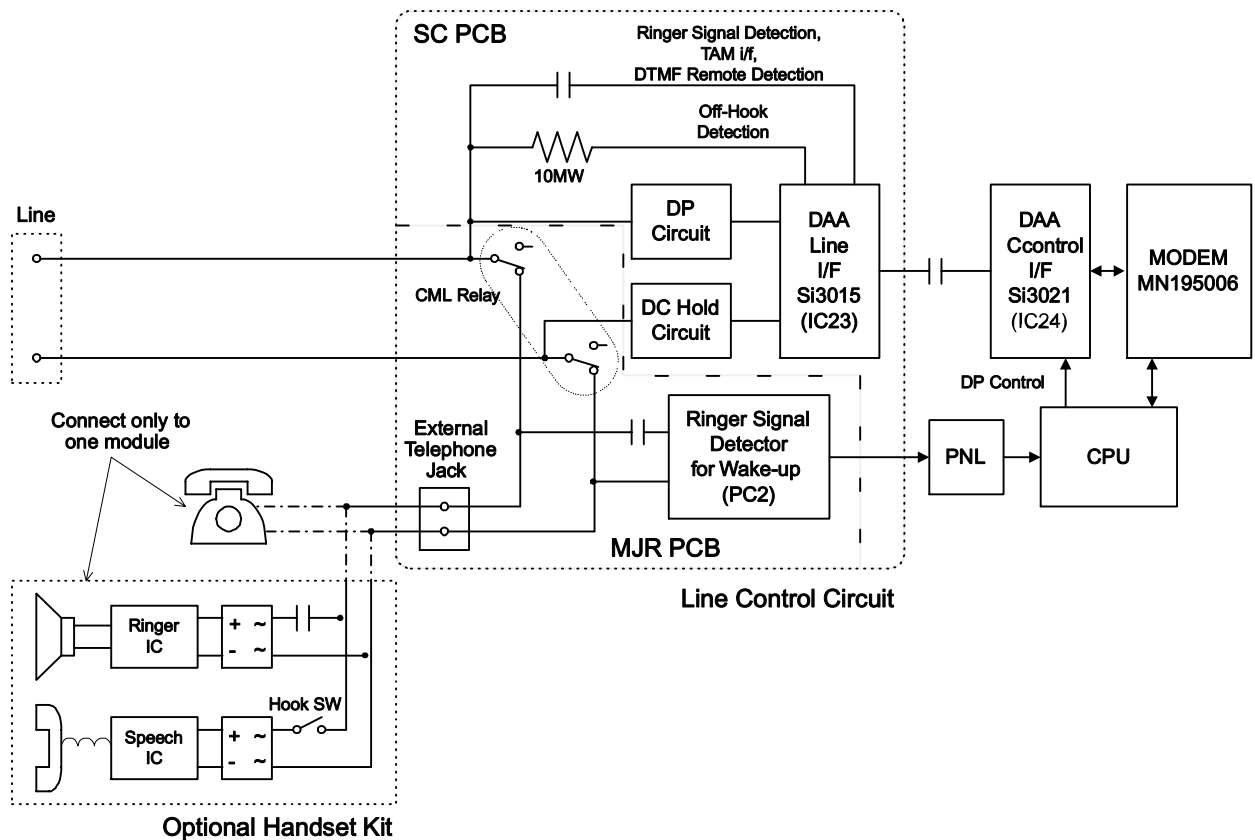
Dial Pulse Generator

The Dial Pulse Generator consists of a CML relay, a DC hold circuit, a dial pulse generate circuit and their peripheral circuits. The generator generates dial pulses. The CPU on the SC PC Board controls all dial pulse generation sequences. When the absence of the terminating message is confirmed by the Off-Hook detector in DAA(IC23), the CPU turns the CML relay ON and the dial pulse generate circuit ON through DAA to develop loop status (DC loop). After a few seconds, the CPU turns the PLS relay ON and OFF to generate dial pulses, making and breaking the loop. The line status during dialing is shown below.

CML Relay — break / make

Dial Pulse Generate Circuit — break / make

Line release | Speech condition | First digit | Speech condition | Second digit | Speech condition

Line status — break / make
Prepause | Inter-digit pause
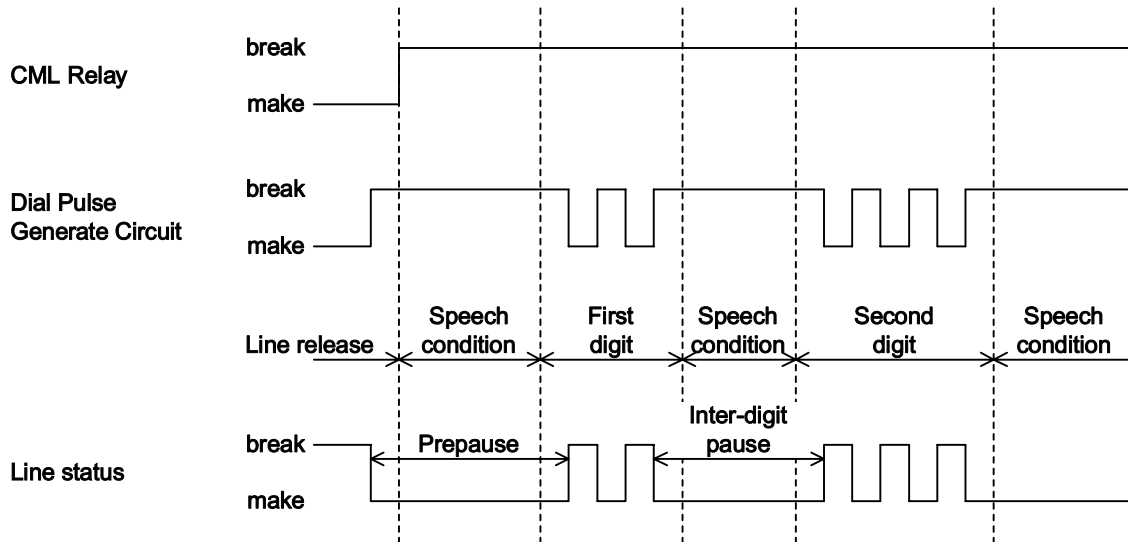
DTMF Tone Generator

The DTMF Tone Generator is incorporated in the MODEM on the SC PC Board. The DTMF tone is conveyed to the telephone line using the same route as the facsimile signal. The DTMF tone selection is controlled by the CPU. Digital amplitude signal is conveyed as analog amplitude signal through D/A converter in the DAA (IC23). The line status during dialing is shown below.

CML Relay — break / make

Line release | Speech condition | First digit | Speech condition | Second digit | Speech condition

Line status — break / make
Signal tim | Inter-digit pause

DTMF signal
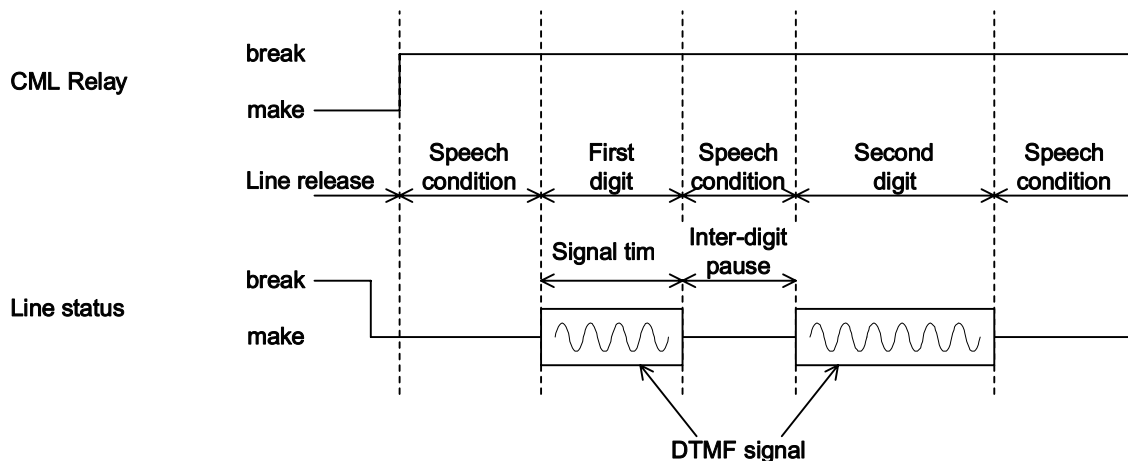
Ring Detector

When the unit is in the Sleep Mode status, a Ringing signal is detected by a photo-coupler (PC2) in Ring Detector to cancel the power-save for waking up. Then DAA (IC23) detects the ringing signal for receive mode.
When the unit is normal operating status, DAA (IC23) detects the ringing signal immediately.

6.2.8   SNS PC Board

Each sensor consists of an LED and photo transistor. When documents are placed on the ADF tray or are moving, a shutter in the document sensor opens. The light from the LED turns the photo transistor "ON", and the output voltage from the sensor becomes a "Low" level. With no document on the ADF tray, the shutter interrupts the light path, and output from the sensor is kept at a "High" level. Operation of the RP Sensor is exactly the same as the ADF Sensor. The ADF Cover Sensor operation is similar, except that the output from the sensor is kept at a "Low" level when the cover is closed and becomes a "High" level when the Printer Cover is opened.
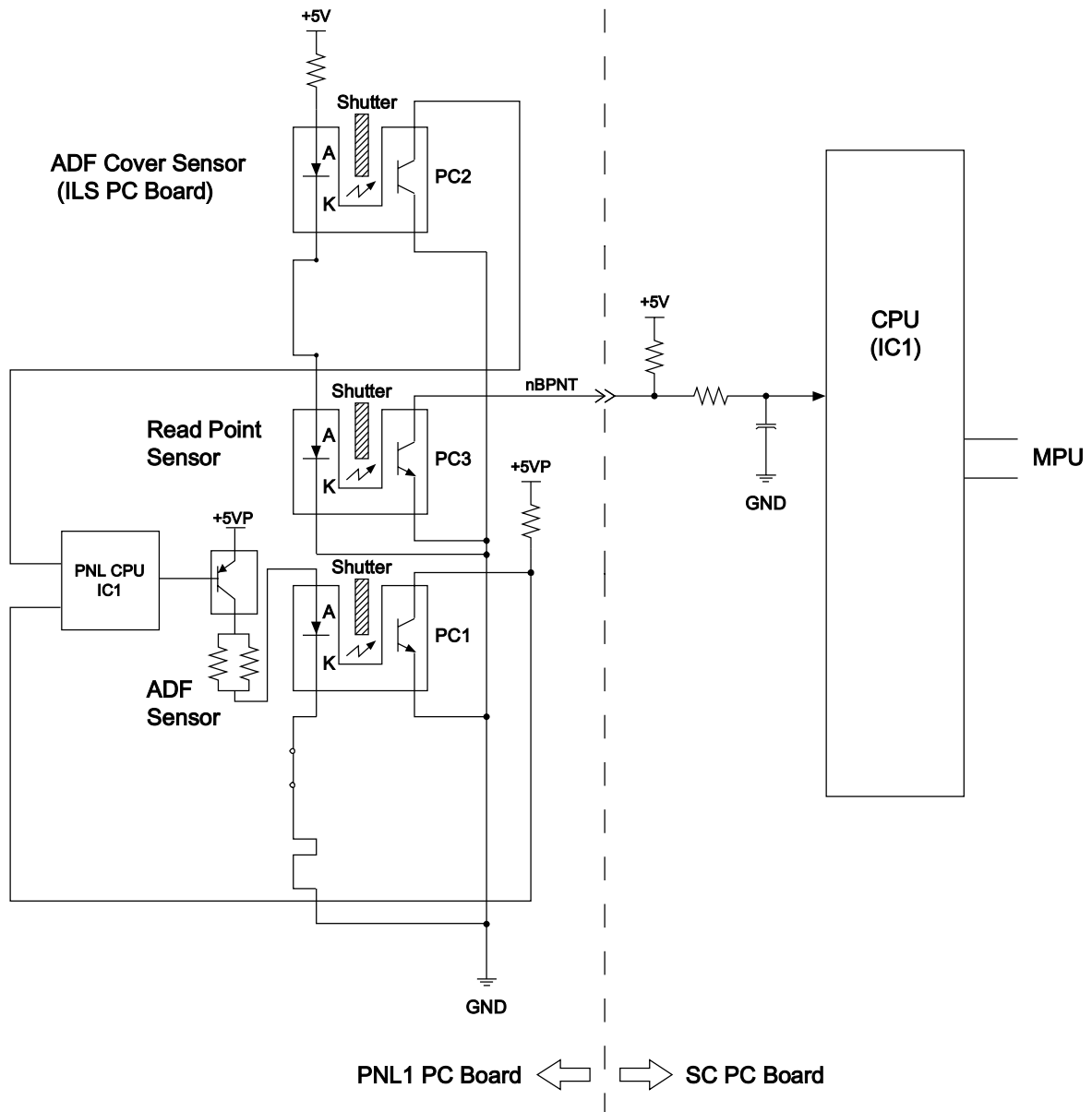
6.2.9   Control Panel

The Control Panel consists of the Display PCB and Panel Unit, which display various status information.It is normally interfaced to the main CPU. Keyed input signals are received by the Panel CPU and the data is transferred to the main CPU on the SC PC Board.
The Control Panel performs the following processes simultaneously:
 • Key inputting
 • LED, LCD display
 • Data transmission / reception

Interface to main CPU
The interfacing between the main CPU and the panel CPU are all executed with commands and responses in the following two formats:
 • Command / response (1 byte) + number of data + check sum
 • Command / response (1 byte) + number of data + data 1 + data 2 .... + data n + check sum.

From /to SC PCB — 11

· 20 characters, 2 lines, 5x7 dots control
· LED, KEY scanning

PNLCK
PNLRD
PNLSD
PNLRST
BZCLK
+5V
+5VP
GND
GND
nPWSAVE
nWAKEUP
nBPNT
BATLVL

LEDCT (1:0)

2
8
LED

LED (1:0)

Key matrix
(59 keys)

8
SCN (7:0) 8

KIN (7:0)

PNL1 PC Board

206
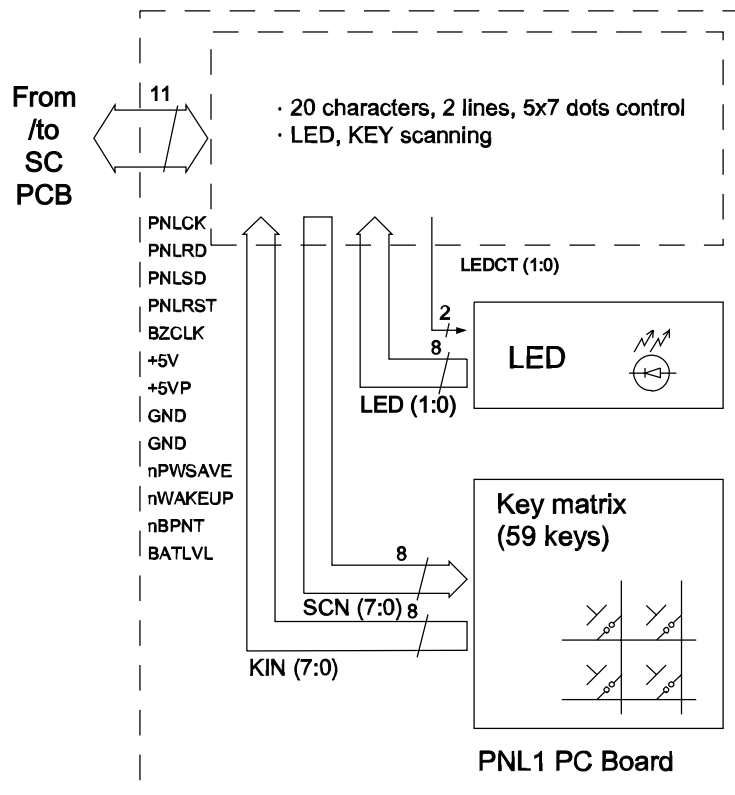
6.2.10 Printer Motor Drive Circuit

Motor Drive Circuit

The Printer Motor is a 4-phase uni-polar PM-type step motor. The step signals (pMMP0A to pMMP3A) are transmitted to IC38 (the Chopper Drive Circuit) from IC3 SHINE output ports. The chopper current is determined by the voltage at IC38, Pin3 and Pin13. The Printer Motor has two speeds, Slow and Constant. The Printer Motor is powered by a +24 VDC supply. When the interlocks are open, the +24 VDC supply is cut off and the Printer Motor stops rotating.
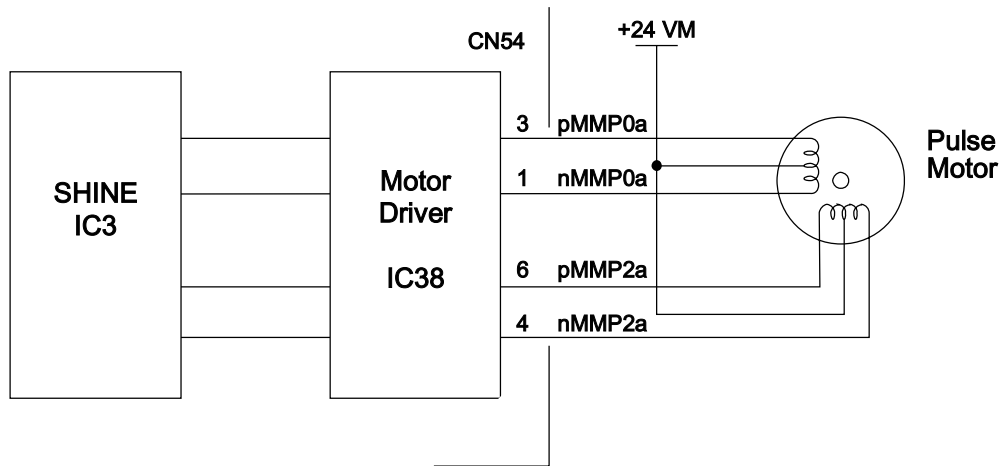
Laser Printer Motor Drive Circuit Block Diagram

Fuser Lamp Drive Circuit

The Fuser Lamp is powered by 100 VAC (200 VAC). It is driven by the LVPS and controlled by the nSSR signal from the SC PC Board. When the CN103, Pin11 (nSSR) on the LVPS goes LOW, the Fuser Lamp turns ON. This lights up the PC102 LED and activates the TRC100 photo-triac, and VAC 115 VAC is sent to the Fuser Lamp. The time at which TRC100 is actually activated depends on the 100 VAC (200 VAC) sine wave. When the cross-voltage for Pin 6 and Pin 4 of PC102 is other than 0 Volts (sine wave exceeds 0 volts), PC102 inhibits the activation of the triac and turns ON the Fuser Lamp.
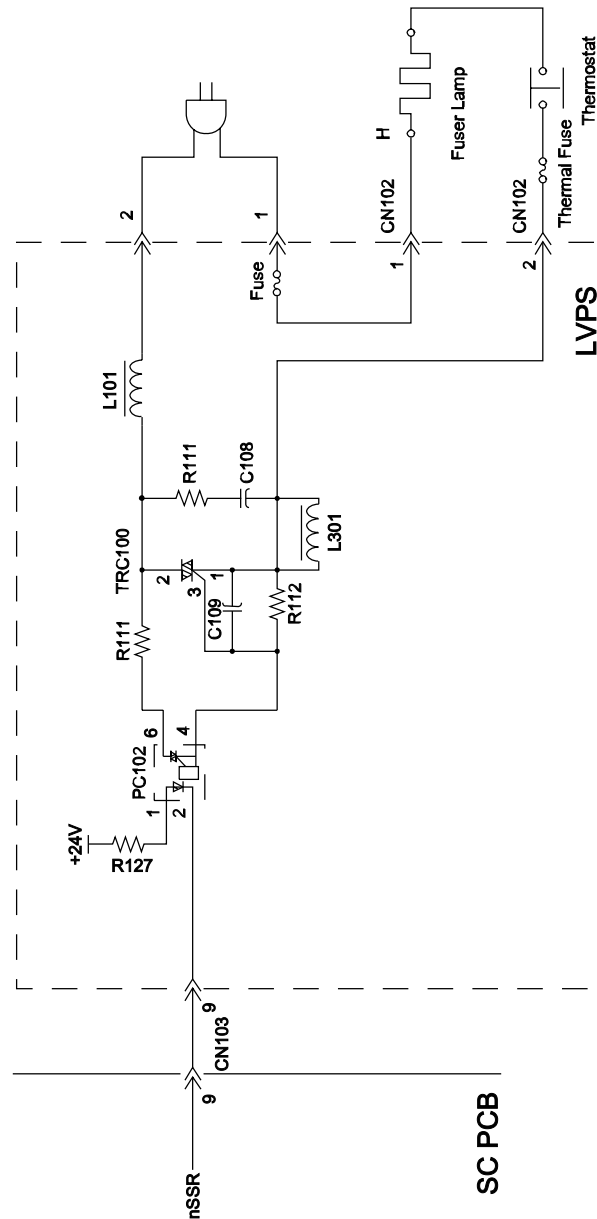
Fuser Lamp Drive Circuit Diagram

Fuser Temperature Control Circuit

The fuser temperature is controlled by IC1 on the SC PC Board, which contains A/D (Analog/Digital) converters ANI0 to ANI7. The Fuser Temperature Control Circuit uses A/D converter, ANI1. When the PC001 drive current is transmitted from the SC PC Board to the PSU (LVPS), the Fuser Lamp turns ON. IC32 is a comparator with open output at pins 1 and 7 and is used as an abnormal temperature detection circuit. IC32, pin 7, has a high impedance when Q44 is activated, turning ON the Fuser Lamp.

An abnormal temperature is detected when the VTH voltage level becomes higher than V+, forcing IC32, pin 7 Low and deactivating Q44.

Abnormally low and high temperatures, as well as Thermistor release status, are detected by IC1 (CPU) programming.
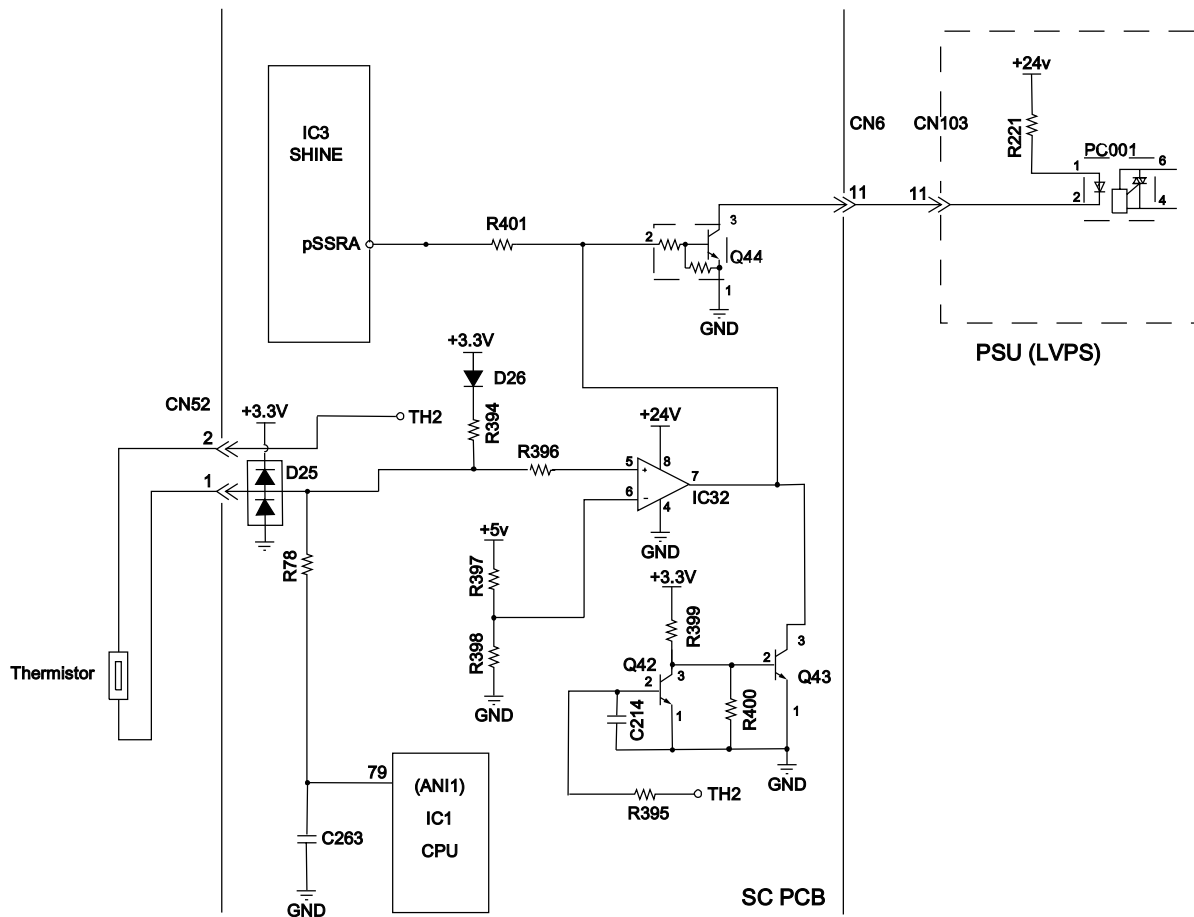
Fuser Temperature Control Circuit Diagram

High Voltage Drive Circuit (Charging, Development and Transfer)

High Voltage is provided through a DC to DC converter, which changes the +24 VDC supply voltage to -650 VDC, and output approximately 0.64 KVAC (Steady current: 200 μA) for the Charging Block. The Developer Circuit converts the +24 VDC to between -300 VDC for the development bias, and outputs 1,500 VAC (p-p) at a frequency of 1.650 kHz to charge the toner. The Transfer Circuit changes the +24 VDC supply voltage to approximately +280 VDC (MAX) (steady current:3 μA/-1500 VDC steady voltage).
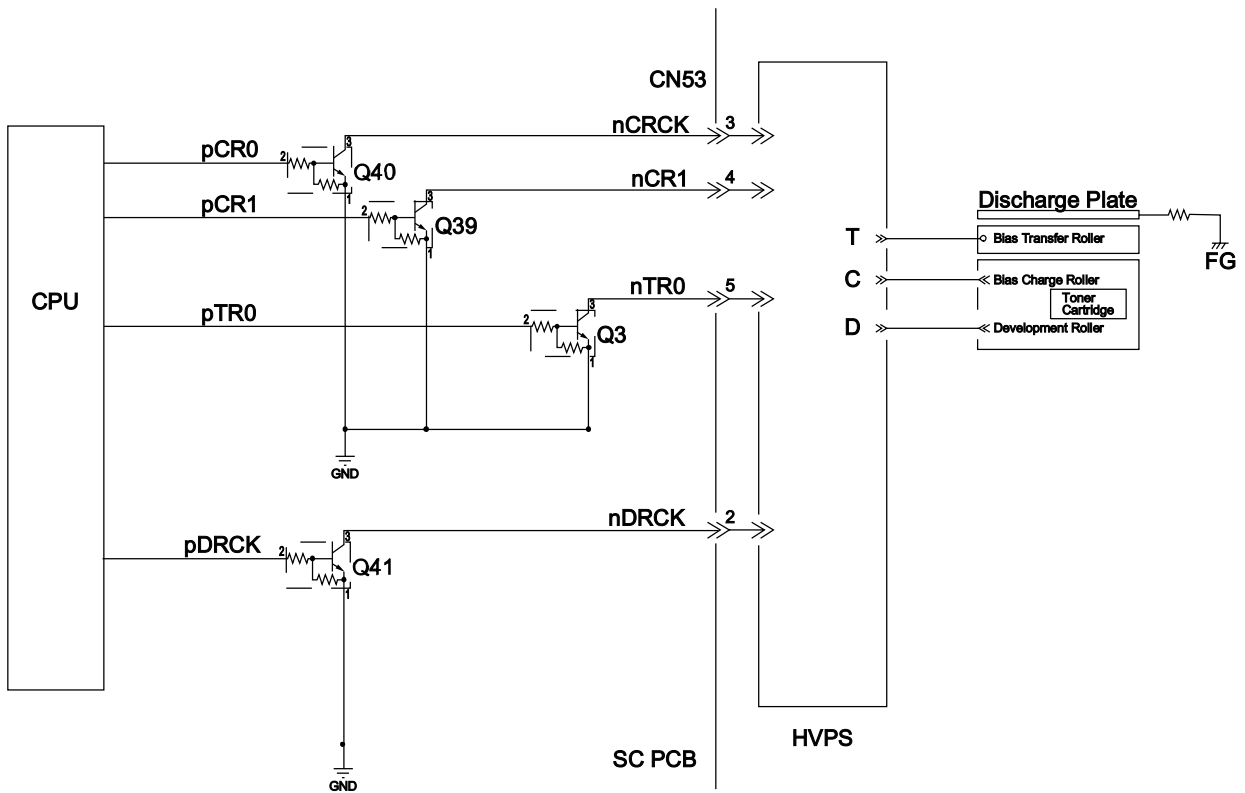
High Voltage Drive Circuit

6.2.11. Interlock Safety Circuit

This safety circuit turns OFF the +24 VDC supply voltages when the Cover is opened. When the Cover is opened, the microswitch(es) on the ILS PC Board are de-actuated, turning OFF +24 VDC to the Printer Drive Circuit, the High Voltage Power Supply, and the Paper Feed Solenoid Circuits, turning OFF the +5 VDC supply voltage for the Laser Driver circuits on the Laser Unit.
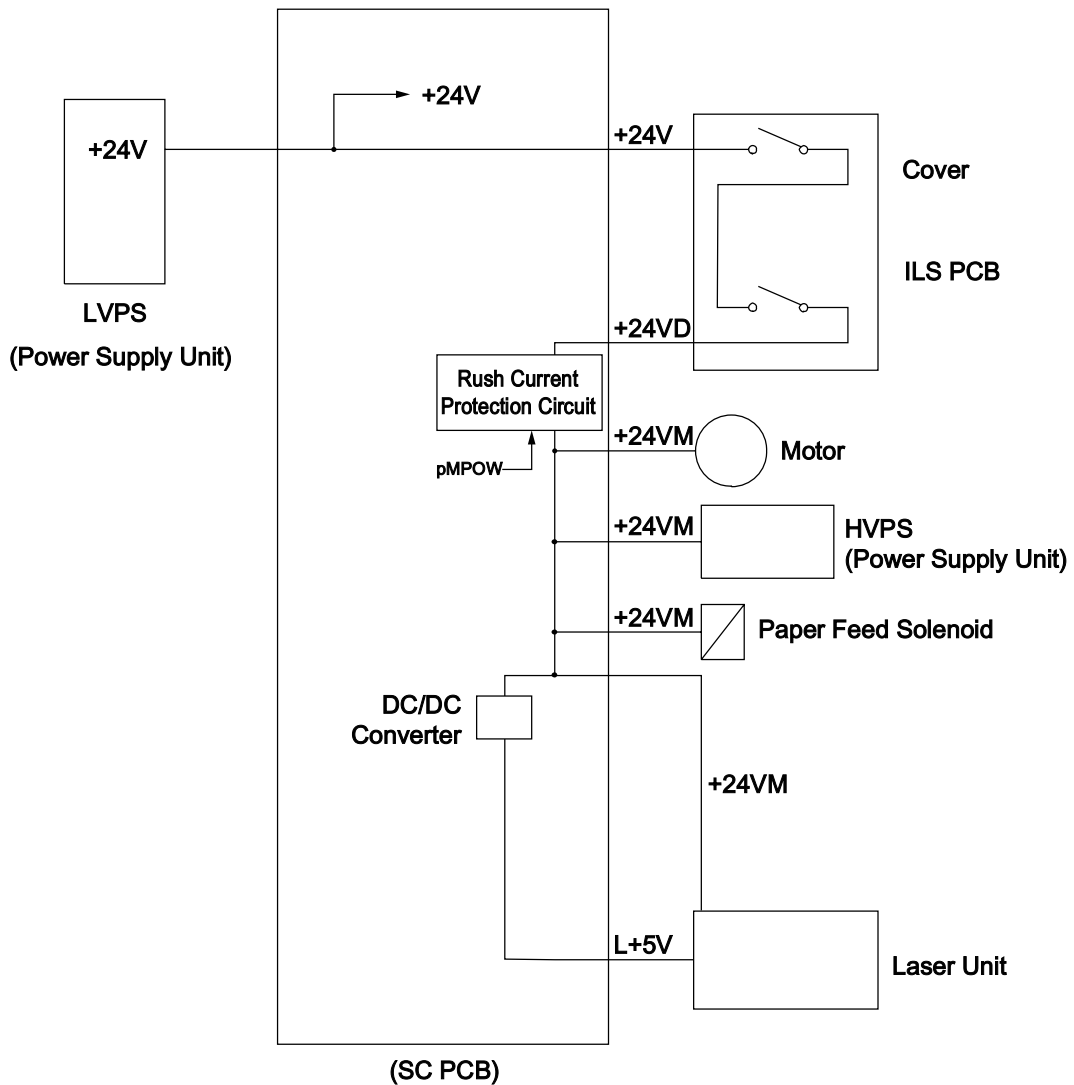
Interlock Safety Circuit Block Diagram

6.2.12 Laser Unit (LSU) Control Circuit

The laser control signals are described below.

nLDEN

The LSU is activated when this output signal is LOW. If an error occurs, the nLDEN output signal level goes High and the LSU is deactivated.

nVIDEO

This is the actual Data Signal. The Laser is ON when the nVIDEO output signal level is LOW.

nHSYNC

This horizontal synchronization signal transmitted from the Beam Detection Sensor sets the horizontal position of the laser beam as it crosses the OPC Drum.

nSTART

This is the Scanner Motor Control Signal. The Scanner Motor rotates when the nSTART output signal level is LOW.

nREADY

A Phased-Lock Loop (PLL) circuit keeps the Scanner Motor speed constant when the nREADY is at a Low output signal level.

CLK

This is the Scanner Motor Clock.

nS/H

This is the Sample Hold Signal in order to adjust the Laser power. When the Laser switches on compulsorily, the Laser Power is adjusted to a suitable level and held until the next duty cycle in order to keep the Laser Power stable.
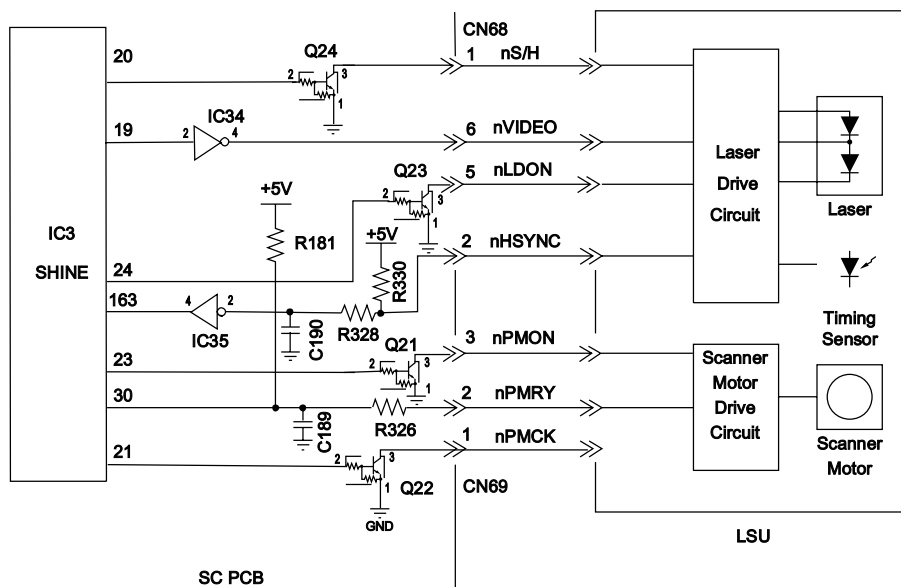
Laser Unit Control Circuit Block Diagram

6.2.13 Power Supply Unit (LVPS)
Block Diagram of DZEA000057
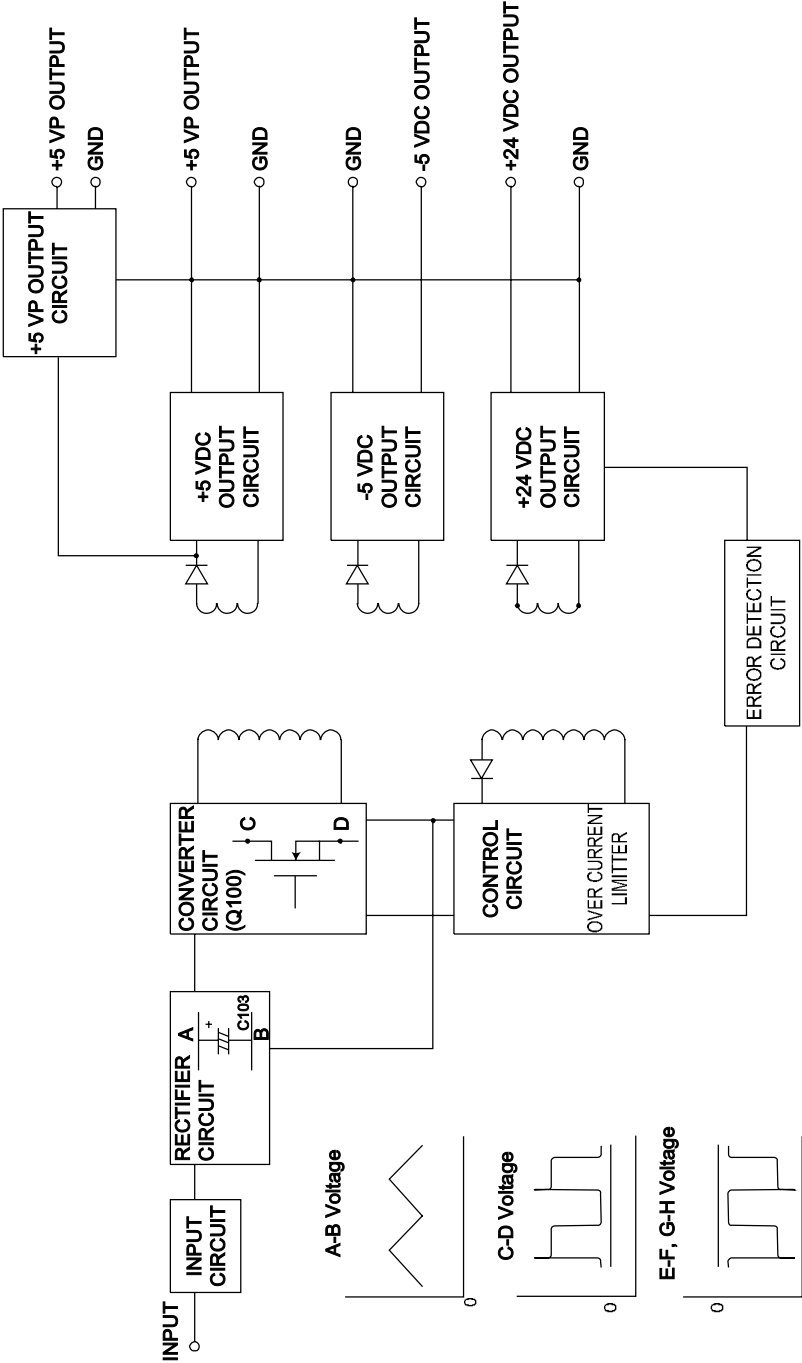
DZEA000057

Input Circuit

AC line voltage travels to the rectifying circuit through the line filter. The line filter eliminates RFI noise which may otherwise pass to the AC line from the power supply unit. It also protects the power supply unit from transient noise which may pass into the unit from the AC line.

Rectifying Circuit

AC power is rectified by D100 and charges C103 to make high DC voltage, then supply power to converter circuit.
Kick-on voltage for control IC (IC105) is supplied AC power through R134, R135 and R136.
Inrush current is limited by TH100.

Converter Circuit

A IC (IC105), in combination with transformer T100, form a switching power supply circuit using the RCC (Ringing Choke Converter) system.
As soon as power is applied to the Power Supply Unit, AC line voltage is rectified by D100 and is smoothed by capacitor C103. The protection circuit at the time of start-up is controlled by an IC (IC105) and resistors R134, R135 and R136.

P — Primary Winding
S — Secondary Winding
B — Control Winding
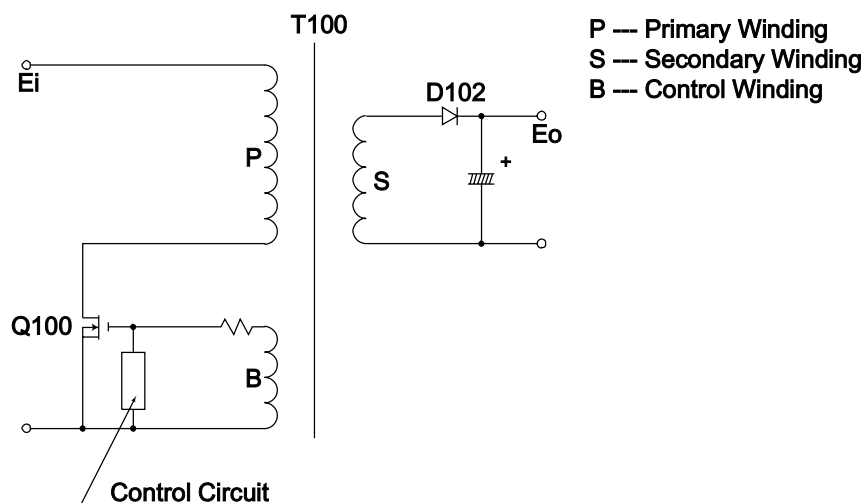
Main Switching Circuit

In the above circuit, when the main switching transistor, Q100, is turned On, input voltage, Ei, is supplied to the primary winding of transformer T100. However, no current will flow through diode D102 of the secondary side, due to reverse polarity of the secondary winding causing no current flow within T100. But the transformer charges with energy. When Q100 is turned Off, the supply voltage to the primary winding shuts off and the windings of T100 change polarity, allowing D102 to conduct, releasing the energy accumulated in T100 to the circuit. When the energy is discharged through D102, Q100 turns on, once again reversing the polarity on T100 windings, creating a self-oscillation circuit.

The value of output voltage is

Eo=d/(1-d)*Ei   Ton : ON time of Q100

d=Ton/Ts   Ts : Period of oscillation

Equivalent circuit model for the RCC.
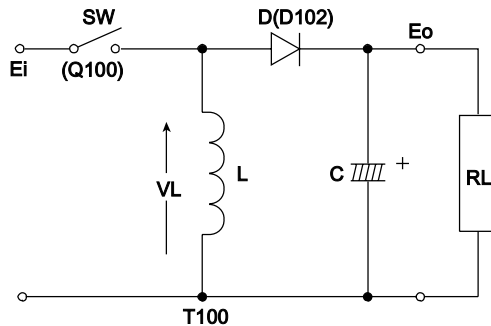
In the equivalent circuit ; When SW is ON, current flows
     SW → L
When SW is OFF, current flows
     L → D → RL
The value of inductance increase current between ON period. (d*Ts)
     IL=Ei/L*d*Ts . . . .(1)
The value of inductance decrease current between OFF period. ((1-d)*Ts) . . . .(2)
From equation (1) and (2),
E0=d/(1-d)*Ei
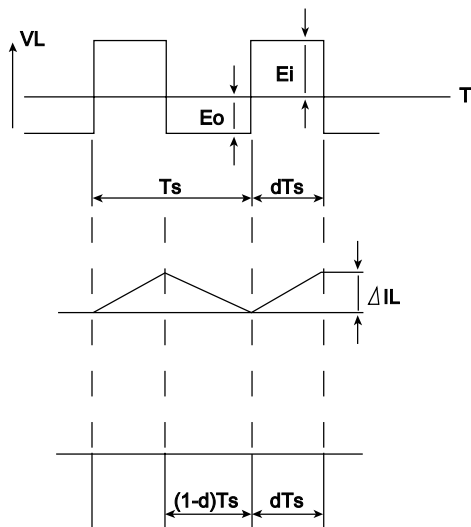
In the actual circuit, the fixed output voltages are obtained by changing the winding ratio of transformer T100. In this converter circuit, the output voltages are stabilized by controlling the duty cycle of the ON and OFF timing of the transistor. In this power supply, the bias winding is built into the transformer. The power supply has four outputs, +24 VDC, -5 VDC, +5 VP and +5 VDC. The +24 VDC output is protected by the Error Detection Circuit, and the +5VDC, +5 VP and -5 VDC outputs are protected by the circuitry inside of the voltage regulator IC.

Control Circuit and Error Detection Circuit

The control circuit amplifies the output of the duty cycle according to the error voltage detected by the Error Detection Circuit, and drives the main transistor Q100. The method used to change the duty cycle is to change the ON time period. When the output voltage of the +24 VDC circuit rises, the current of photo coupler PC103 increases, the output pulse width of the control circuit decreases and the ON time period of Q100 decreases. This control circuit decides the minimum OFF time period by itself. When the oscillation frequency becomes higher and the OFF time period becomes minimum, the OFF time period remains unchanged and only the ON time period decreases. This way, there is a upper limit of the oscillation frequency and the duty cycle is expanded.

Over Current Limiter (O.C.L)

The +24 VDC output is limited by Ton MAX Limiter (ON time period of transistor Q100) which is part of the control circuit. The +5 VP, -5 VDC and +5 VDC outputs have over current limiters provided inside the voltage regulator.

7 Exploded View & Parts List

7.1. Destination Codes

Note:
1. Panasonic Document Imaging Company and other Panasonic Sales Companies reserve the right to change any information enclosed herein without prior notification.
   (This includes, but is not limited to, parts pricing and availability, and text)
2. Electrical parts supplied may include previously used components.
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
4. In New Parts column, "N" indicates part is used only in UF-590 / 790 model, "C" indicates part is used in previous models.

Code	Destination	Code	Destination	Code	Destination	Code	Destination	Code	Destination
AA	Austria	AM	Switzerland	EN	Denmark, Finland, Norway, Sweden	YH	Hungary	YX	Singapore
AB	England	AP	Portugal			YJ	Czechoslovakia		
AE	Taiwan	AR	Belgium	YA	Panama, Peru, Chile, Argentina, Brazil (200 VAC Power Supply)	YM	Malaysia		
AG	Germany	AT	Turkey			YR	Russia, Ukraine		
AH	Netherlands	AU	USA, Puerto Rico, Canada	YC	Universal 200 VAC Power Supply Version	YS	Saudi Arabia		
AJ	Spain	AV	France			YT	Thailand		
AK	Hong Kong SAR, PRC	AW	New Zealand	YF	Poland	YV	China		
AL	Australia	EE	Italy	YG	Greece	YW	South Africa		

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7.2. Cover Assembly

Ref. No.	Part Number	Part Name	New Parts	Remarks
101	DZKP000166	Spring Plate, Doc. Guide	C	
102	DZMC000525	Cover, Right	C	
103	DZMC000738	Cover, Left	N	
104	DZMC000529	Cover, Front	C	
105	DZMC000737	Cover, Rear	N	
106	DZML000289	Cover, Printer	C	
106	DZML000370	Cover, Printer	C	
107	DZML000291	Guide, R Document	C	
108	DZML000293	Guide, L Document	C	
109	DZML000295	Tray, Document Sub	C	
109	DZML000384	Tray, Document Sub	C	
111	DZML000297	Tray, Recording Paper	C	
112	DZML000299	Tray, Recording Paper Sub	C	
114	DZMC000567	Cover, Connector Access	C	
	DZNK003722			
	DZNK003755			
	DZNK003843			
	DZNK003846			
	DZNK003848			
	DZNK003850			
	DZNK003855			
116	DZNK003857	Label, Function	N	The Part Number depends on each individual destination
	DZNK003859			
	DZNK003861			
	DZNK003871			
	DZNK003906			
	DZNK003907			
	DZNK003908			
	DZNK003996			
117	DZDR000014	Speaker	C	
118	FFPTE2650	Label, EPA Mark	C	
119	DZLF000180	Gear, B14	C	
120	DZDU000024 or DZDU000027 or DZDU000031 or DZDU000025	Handset	C	The Part Number depends on each individual destination
121	DZFN000066	Cord, Handset	C	
122	DZJB000738	Cradle, Upper	C	The Part Number depends on each individual destination
123	DZJB000165 DZFN000117 DZFN000118	Cord, Cradle	N	The Part Number depends on each individual destination
125	DZJB000740	Cradle, Lower	C	The Part Number depends on each individual destination
127	DZNK000166	Label, Laser Caution	C	
128	DZNK003620	Label, High Temperature	C	
129	DZNK002256	Seal, Blind	N	
130	DZEA000173	Core, Ferrite	N	
1011	DZDN000271	PC Board, SRU		See Sect. 7.11 PC Board / Harness
1016	DZFP000723	Harness, SC-SPK	C	
19	XTB3+8J	Screw	C	
1Y	XTB3+10J	Screw	C	
B1	DZFB000007	Screw	C	
C2	DZFB000020	Screw	C	

Fig. 1: Cover Assembly

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Ref. No.	Part Number	Part Name	New Parts	Remarks
201	DZJB000106	Chassis, Control Panel	C	
202	DZJC000216	Holder, Separation Rubber	C	
203	DZKL000023	Lever, ADF Adjustment	C	
204	DZKP000164	Spring, Plate	C	
205	DZKR000016	Spring, Wire	C	
206	DZLA000176	Roller, Eject Pinch	C	
207	DZJN000001	Rubber, Separation	C	
208	DZKP000179	Ground Plate, Control Panel	C	
209	DZGT000023	Brush, Antistatic	C	
210	DZMG000025	Latch, Stopper	C	
211	DZMC000744 DZMC000752 DZMC000753 DZMC000754 DZMC000755 DZMC000756 DZMC000757 DZMC000758 DZMC000760 DZMC000761	Cover, Panel	N	The Part Number depends on each individual destination
212	DZKB000778 DZKB000814 DZKB000816 DZKB000817 DZKB000818 DZKB000819	Key, Start	N	The Part Number depends on each individual destination
212	DZKB000820	Key, Start	N	
213	DZKB000780	Key, Cursor	N	
214	DZKB000782	Key, Clear	N	
215	DZKB000784	Key, Copy	N	
216	DZKB000786	Key, Ten	N	
217	DZKB000788	Key, Radial	N	
218	DZKB000790	Key, Stamp	N	
219	DZKB000792	Key, Contrast	N	
220	DZNA000822 DZNA000860 DZNA000862 DZNA000864 DZNA000866 DZNA000868 DZNA000870 DZNA000872 DZNA000876 DZNA000878	Plate, LCD	N	The Part Number depends on each individual destination
221	DZNA000826 DZNA000865 DZNA000863 DZNA000861	Sheet, Directory	N	The Part Number depends on each individual destination
222	DZNA000824	Sheet, Character	N	
224	DZHC000091	Actuator A (ADF Sensor)	C	
225	DZHC000092	Actuator B (Read Point Sensor)	C	
226	DZHC000093	Actuator, ADF Door	C	
227	DZJC000230	Holder, Actuator A	C	
228	DZJC000231	Holder, Actuator B	C	
229	DZJC000232	Holder, ADF Door Actuator	C	
235	DZKG000018	Shaft 2, Roller	C	
236	DZLA000058	Roller, Feed Pinch	C	

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks	AA	AB	AE	AG	AH	AJ	AK	AL	AM	AP	AR	AT	AU	AV	AW	EE	EN	YA	YC	YF	YG	YH	YJ	YM	YR	YS	YT	YV	YW	YX
	237	DZJC000113	Plate, Separator Pressure	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	238	DZJM000104	Seal, White	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	239	DZMG000018	Latch	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	241	DZKR000015	Wire Spring, Pressure Plate	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	242	DZKR000018	Wire Spring, Latch	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	243	DZJM000969	Sheet, VC	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1004		PC Board, PNL1	N	See Sect. 7.11 PC Board / Harness	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1026	DZFP001215	Harness, SC-PNL	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	19	XTB3+8J	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	7B	XTB26+6J	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Fig. 2: Control Panel Unit

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7.4. Transmitter Assembly

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks
	301	DZJB000105	Guide, Transmit	C	
	302	DZLA000163	Roller, Feed	C	
	303	DZLA000164	Roller, Eject	C	
	304	DZKG000094	Shaft, Clutch	C	
	305	DZLF000270	Gear, ADF	C	
	306	DZJA000584	Bracket, LED	C	
	307	DZJA000585	Clip, LED	C	
	308	DZTB000021	Glass, Scanning	C	
	309	DZJA011153	Bracket, Motor	N	
	310	DZLF000271	Gear, B54B22	C	
	311	DZLF000272	Gear, B55D30	C	
	312	DZLF000273	Gear, B55D16	C	
	313	DZLF000274	Gear, D17	C	
	314	DZLF000275	Gear, D50	C	
	315	DZLM000082	Bushing, P10	C	
	316	DZLM000083	Bushing, P6A	C	
	317	DZKP000163	Plate, Ground	C	
	318	DZLM000084	Bushing, P6B	C	
	319	DZLD000009	Clutch, Drum	C	
	320	DZKP000178	Spring Plate, EMI	C	
	321	DZHP002384	Scanner Block	C	
	322	DZJB000108	Chassis, Scanner	C	
	324	42S1S2D6NB	Motor, Transmit	N	
	325	DZHT000027	Stamp, Head	C	The Part Number depends on each individual destination
	326	DZJC000072	Holder, Stamp	C	
	327	DZHP005744	Solenoid, Stamp	N	
	329	LNR304713	A4 LED Array	C	
	329	LNR314707	B4 LED Array	C	
	330	DZKP000001	Spring Plate, Mirror	C	
	331	DZLA000096	Roller, ADF	C	
	332	DZLF000165	Gear, D25F Drive	C	
	333	DZKQ000004	Spring 1, Clutch	C	
	334	DZTC000020	Mirror 1	C	
	335	DZTC000021	Mirror 2	C	
	336	DZTC000022	Mirror 3	C	
	338	DZJC000192	Shaft, ADF Angular	C	
	341	DZJM000301	Film, ADF	C	
	342	DZLM000092	Bushing, P6C	C	
	343	DZKR000017	Wire Spring, Roller	C	
	344	DZMH000009	Bracket, Eject Roller	C	
	1014	DZMC100264	PC Board, CCD	C	
	1019	DZFP001251	Harness, SC-CCD	N	
	1020	DZFP001216	Harness, SC-TXMOT	N	
	1022	DZFP001213	Harness, SC-LED	N	
	19	XTB3+8J	Screw	C	
	4N	XSN3+W8FC	Screw	C	

Destination quantity columns (AA, AB, AE, AG, AH, AJ, AK, AL, AM, AP, AR, AT, AU, AV, AW, EH, EN, YA, YC, YF, YG, YH, YJ, YR, YM, YB, YT, YT, YV, YW, YX) indicate a quantity of "1" for each listed part across destinations, with some destinations marked "-" (not applicable).
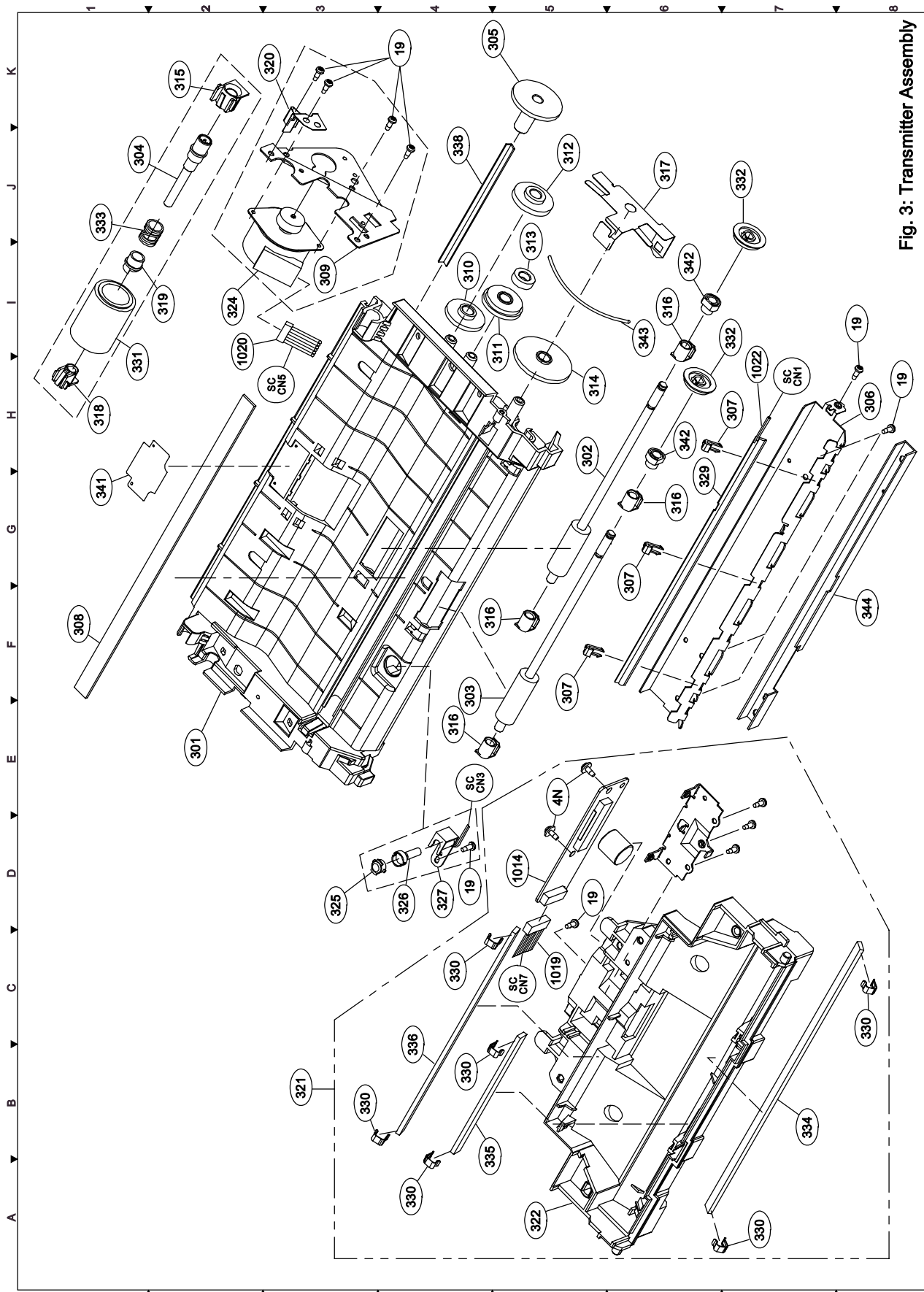
Fig. 3: Transmitter Assembly

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7.5. Electrical Parts

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks	AA	AB	AC	AG	AH	AJ	AK	AL	AM	AP	AR	AT	AU	AV	AW	AE	EN	YA	YC	YF	YG	YH	YJ	YM	YR	YS	YT	YV	YW	YX
	401	DZJA000974	Plate, L Power	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	402	DZMC000741	Bracket, L Power	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	403	DZJC000317	Bracket, SC	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	404	DZJK000063	Spacer, Card	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	405	DZJK000062	Spacer, Locking Card	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	406	DZMC000746	Cover, F-ROM	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	407	DZJC000313	Holder, MS	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	426	DZJF000350	Guide 2, Memory Card	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	427	DZJK000005	Clamp, Harness	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	428	FFPTR2719	Label, F-ROM	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
△	1001		PC Board, SC		See Sect. 7.11 PC Board / Harness	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
△	1002		Power Supply Unit		See Sect. 7.11 PC Board / Harness	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
△	1003		PC Board, MJR		See Sect. 7.11 PC Board / Harness	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
△	1005	DZEC102275	PC Board, ACI	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1006	DZEC102113	PC Board, ILS	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1021	DZFP001218	Harness, SC-ILS	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	19	XTB3+8J	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	G8	XWC3B	Washer	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
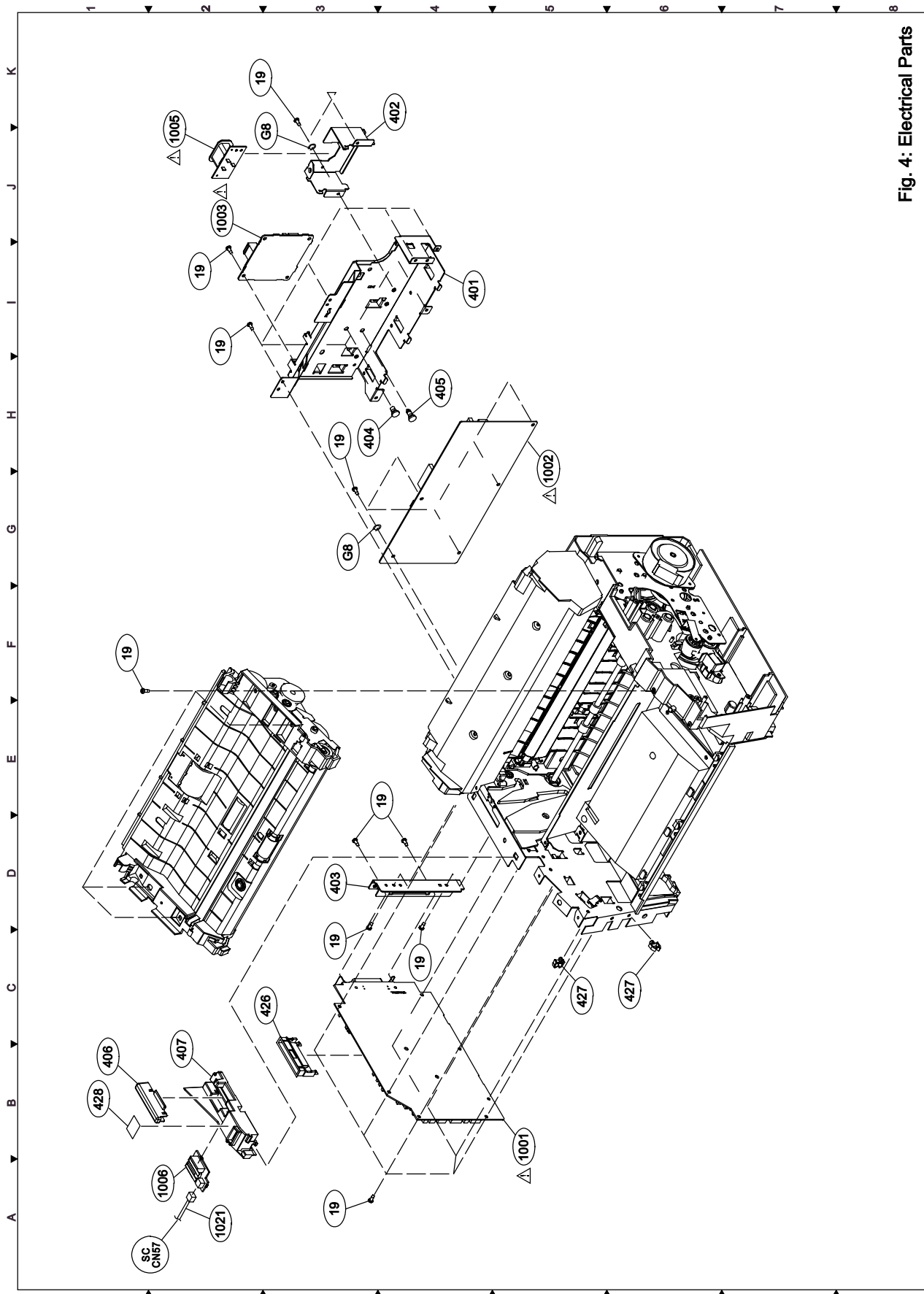
Fig. 4: Electrical Parts

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Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks	AA	AB	AE	AG	AH	AJ	AK	AL	AM	AP	AR	AT	AU	AV	AW	AE	EN	YA	YC	YF	YG	YH	YJ	YM	YR	YS	YT	YV	YW	YZ
	501	DZJA000587	Chassis, Bottom	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	502	DZJA000588	Chassis, Right	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	503	DZJF000356	Chassis, Left Sub	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	504	DZMC000739	Plate, Left	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	505	DZMC000740	Chassis, Rear	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	506	DZKP000162	Spring Plate, Toner Sensor	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		DZKF000311		N														1																	
	507	DZJH000547	Plate, A	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	508	DZKN000161	Spring, A Coil	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	510	DZKQ000021	Spring, Right Cartridge Locking	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	511	DZKQ000022	Spring, Left Cartridge Locking	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	512	LPAL602F02	Laser Unit	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	513	DZAN000002	Sensor, Toner	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	514	DZMM000016	Leg, Rubber	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	515	DZKP000009	Plate, Ground	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	516	DZJL000201	Plate, Memory Earth	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	517	DZKG000095	Shaft, Feed Roller	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	518	DZLA000081	Roller, Paper Feed	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	519	DZLM000050	Bushing, P6L8	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	520	DZLF000131	Gear, M34	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	521	DZKN000073	Spring, Clutch Coil	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	522	DZJB000024	Case, Clutch	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	523	DZJM000300	Drum, Clutch	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	525	DZHC000089	Actuator, No Paper	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	526	DZLA000175	Roller, Feed	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	527	DZLM000052	Bushing, P6L5 Conductive (Black)	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	528	DZLM000006	Bushing, P6L5 (White)	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	529	DZLF000268	Gear, Feed	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	531	DZGB000029	Solenoid, Paper Feed	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	533	DZMC000520	Plate, CCD Shield	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	542	DZFP000764	Ground Wire	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	543	DZJC000312	Holder, HT	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1009	DZEC101163	PC Board, SNS3	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1010	DZEC101076	PC Board, SNS2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1018	DZFP000731	Harness, SC-SNS3	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1023	DZFP001223	Harness, SC-LSU 2	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1024	DZFP001222	Harness, SC-LSU 1	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1030	DZFP000732	Harness, SNS1-SNS2	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1031		Harness, SNS3-TNR		See Sect. 7.11 PC Board / Harness																														
	1032	DZFP001219	Harness, PSU-C-D	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	19	XTB3+8J	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1Y	XTB3+10J	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	4N	XBN3+W8FC	Screw	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	B9	DZJM000171	Snap Ring	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Fig. 5: Base Unit

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7.7. Paper Transportation

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks	AA	AB	AF	AG	AH	AJ	AK	AL	AM	AP	AR	AT	AU	AV	AW	EM	EN	EA	YC	YF	YG	YH	YJ	YM	YR	YS	YT	YV	YW	YX
	601	DZJF000353	Guide, Transfer	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	602	DZJF000355	Guide, BTR	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	603	DZHA000114	Sheet, Mylar	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	604	DZLA000174	Roller, Bias Transfer	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	605	DZLM000085	Bushing, Left BTR (White)	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	606	DZKN000025	Spring, BTR	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	607	DZLA000080	Roller, Pinch	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	608	DZKR000014	Spring, Wire	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	609	DZHC000088	Actuator, Timing	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	610	DZLM000081	Bushing, Right BTR (Black)	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	611	DZLF000269	Gear, BTR	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	612	DZJL000092	Plate, Discharge	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	613	DZFP000747	Resistor	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	614	DZKP000160	Plate Spring, Ground Transfer	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	616	DZJA000590	Bracket, Printer Motor	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	617	DZLF000281	Gear D, M24	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	618	DZLF000280	Gear E, D25E29	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	619	DZLF000278	Gear F, D55	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	620	DZLF000279	Gear A, D31	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	621	DZLF000277	Gear B, D60D20	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	622	DZLF000276	Gear G, B83D22	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	623	DZLF000282	Gear C, D62E18	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	624	DZLF000283	Gear I, E29	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	625	DZLF000284	Gear H, E23	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	626	55SPM25D7NA2	Motor, Printer	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	628	DZKP000161	Ground Spring, Feed Roller	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	629	DZFP000737	Harness, FG1	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1008	DZMC101075	PC Board, SNS1	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1025	DZFP000724	Harness, SC-RXMOT	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1029	DZFP000728	Harness, SNS1-SNS4	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1030	DZFP000732	Harness, SNS1-SNS2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1033	DZFP001221	Harness, PSU-T	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	19	XTB3+8J	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	4N	XSN3+W8FC	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	C8	XTW3+8SFC	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Fig. 6: Paper Transportation

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7.8. Fuser Unit

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks
	701	DZHP005740	Fuser Unit	C	The Part Number depends on each individual destination
		DZHP006152			
	702	DZJB000112	Frame, Fuser	C	
	703	DZJF000354	Guide, Lower Paper Exit	C	
	704	DZGT000021	Brush, Discharge	C	
	705	DZKK000039	Plate, Pressure Roller Arm	C	
	706	DZLA000088	Roller, Pressure	C	
	707	DZLM000041	Bushing, P6L5.5	C	
	708	DZKN000302	Spring, Pressure	N	
	709	DZLA000072	Roller, Fuser	C	
	710	DZLM000047	Bushing, P17L6.8	C	
	711	DZLF000147	Gear, H24 Drive	C	
	712	DZPJ000002	C-Ring	C	
	713	DZLF000263	Gear, H18	C	
	714	DZLF000264	Gear, H14	C	
	715	DZKP000159	Spring, Pinch Roller	C	
	716	DZJA000583	Holder, Pinch Roller	C	
	717	DZLA000172	Roller, Exit Pinch 1	C	
	718	DZLA000188	Roller, Exit Pinch 2	C	
	719	DZLA000173	Roller, Exit	C	
	720	DZLM000039	Bushing, Right P3.5L11.2	C	
	721	DZLM000040	Bushing, Left P3.5L11.2	C	
	722	DZLF000265	Gear, H22	C	
	723	DZJB000111	Cover, Fuser	C	
	724	DZJC000222	Terminal A, Fuser Lamp	C	
⚠	725	DZDX000003	Thermostat	C	(See Note)
⚠	726	DZGT000013	Thermal Fuse	C	(See Note)
	728	DZGT000022	Thermistor Assembly	C	
	730	DZKK000038	Actuator, Paper Exit	C	
	731	DZJC000223	Terminal B, Fuser Lamp	C	
⚠	732	DZGW000006	Lamp, Fuser (100V)	C	
	732	DZGP000001	Lamp, Fuser (200V)	C	
	733	DZJB000929	Cover, Fuser Top	N	
	734	DZNK000036	Label, High Temperature Caution	C	
	735	DZNK002185	Label, Print Cartridge Instruction	C	
	737	DZJM000327	Sheet, Mylar	C	
	1007	DZKC102278	PC Board, SN84	C	
	1017	DZFP001217	Harness, SC-SN84	N	
	1028	DZFP001220	Harness, PSU-FUSER	N	
	1029	DZFP000728	Harness, SN81-SN84	C	
	19	XTB3+8J	Screw	C	
	23	XYN3+F8	Screw	C	
	1Q	XYN3+F10	Screw	C	
	4N	XSN3+W8FC	Screw	C	

Country availability columns (AA, AB, AF, AG, AH, AJ, AK, AL, AM, AP, AR, AT, AU, AV, AW, AE, EN, YA, XC, YF, YG, YH, YJ, YM, YR, YS, YT, YV, YW, YX) are largely marked "1" for each part, with "-" indicating non-availability.

Note:
This part is subject to the U.S. Export Administration Laws and Regulations for export or re-export to the countries specified in the Note bellow.
Purchaser of those countries are requested to order the Fuser Unit Assy (DZHP006152) in stead of this part.
Countries subject to embargo are: Cuba, Iran, Iraq, Libya, North Korea, Syria and the Sudan.
This list is subject to change without further notice from Matsushita Graphic Communication Systems, Inc.

Fig. 7: Fuser Unit

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7.9. Cassette

7.9. Cassette

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks	AA	AB	AE	AG	AH	AJ	AK	AL	AM	AP	AR	AT	AU	AV	AW	EN	EA	YC	YF	YG	YH	YJ	YM	YR	YS	YT	YV	YW	YI
	801	DZJF000359	Frame, Cassette Base	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	802	DZJF000360	Guide, Paper Length	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	803	DZJF000364	Guide, Paper Width	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	804	DZJF000362	Cover, Cassette	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	805	DZJF000365	Tray, Document Return	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	806	DZKM000018	Plate, Pressure	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	807	DZJF000005	Pad, Pressure Plate	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	808	DZMK002122	Label, Cassette	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	809	DZJC000226	Clip, L Paper Separation	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	810	DZKN000163	Spring, Pressure	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	811	DZJC000227	Clip, R Paper Separation	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Fig. 8: Cassette

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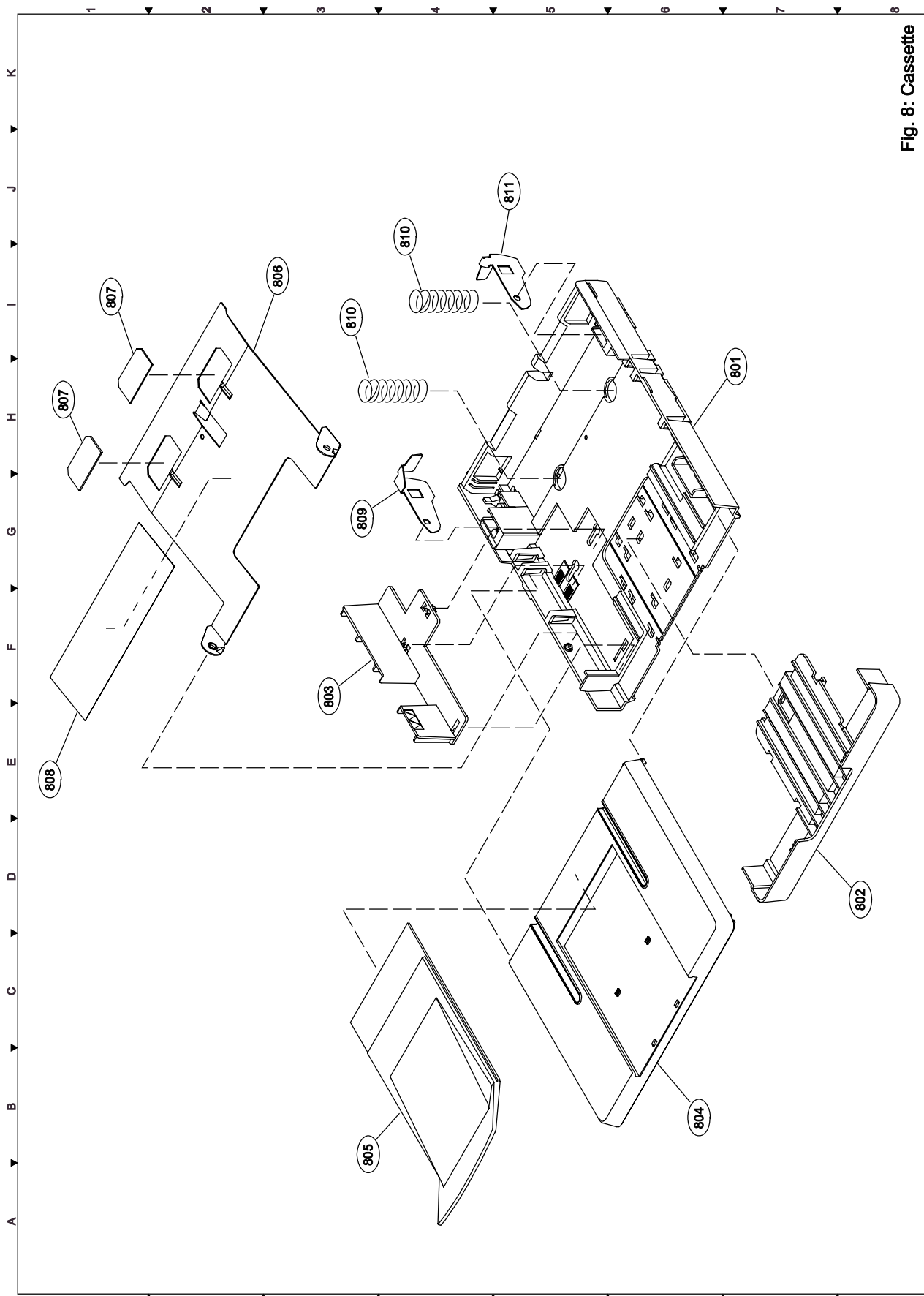
7.10. Option Cassette

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks	AA	AB	AE	AF	AG	AH	AJ	AK	AL	AM	AP	AR	AT	AU	AV	AW	EH	EN	YA	YC	YF	YG	YH	YJ	YM	YR	YS	YT	YV	YW	YX
	901	DZJB000118	Frame, Option Cassette Base	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	902	DZMC000514	Plate, Base Frame	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	903	DZJA000593	Bracket, Gear	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	904	DZLA000187	Roller 2, Feed	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	905	DZLF000282	Gear, D62E18	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	906	DZLF000283	Gear, E29	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	907	DZLF000284	Gear, E23	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	908	DZGB000019	Solenoid, Paper Feed	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	909	DZKF000161	Ground Spring, Feed Roller	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	910	DZKG000095	Shaft, Feed Roller	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	911	DZLA000081	Roller, Paper Feed	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	912	DZLM000050	Bushing, P6L8	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	914	DZLF000131	Gear, E34	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	915	DZKN000073	Spring, Clutch Coil	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	916	DZJB000024	Case, Clutch	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	917	DZJM000300	Drum, Clutch	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	918	DZLF000268	Gear, Feed	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	919	DZLA000080	Roller, Pinch	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	920	DZKF000118	Spring, Pinch Roller	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	922	DZHC000089	Actuator, No Paper	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	924	DZJE000547	Plate A	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	925	DZMM000016	Leg, Rubber	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	926	DZHF002499	Assembly, Cassette Cover	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	930	DZJF000380	Guide, Recording Paper Sub	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	931	DZJM000354	Sponge Earth	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1012	DZEC101184	PC Board, CST2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1013	DZEC101076	PC Board, SNS2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1034	DZFP000716	Harness, SC-CST2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1035	DZFP000717	Harness, CST2-SNS2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	19	XTB3+8J	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	4N	XBN3+W8FC	Screw	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	5Y	XUC4	E-Ring	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	B9	DZJM000171	Snap Ring	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Fig. 9: Option Cassette

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7.11. PC Board / Harness

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks	AA	AB	AF	AG	AH	AJ	AK	AL	AM	AP	AR	AT	AU	AV	AW	AX	EN	YA	YC	YF	YG	YH	YJ	YM	YR	YS	YT	YV	YW	YX
⚠	1001	DZEC102375																																
		DZEC102377					1																										
		DZEC102378							1																								
		DZEC102379								1																							
		DZEC102380									1																						
		DZEC102381										1																					
		DZEC102382											1																				
		DZEC102383												1																			
		DZEC102384													1																		
		DZEC102385																									1						
		DZEC102386																										1					
		DZEC102387																							1								
		DZEC102388																				1											
		DZEC102389																												1			
		DZEC102391	PC Board, SC	N	The Part Number depends on each individual destination																												1	
		DZEC102392																													1		
		DZEC102393																															1
		DZEC102394																															1
		DZEC102395																															1
		DZEC102410									1																						
		DZEC102411				1																											
		DZEC102413								1																							
		DZEC102414													1																		
		DZEC102415																															1
		DZEC102417														1																	
		DZEC102418										1																					
		DZEC102420																				1											
		DZEC102421																															
		DZEC102448																	1														
		DZEC102390																															
⚠	1002	DZEA000057	Power Supply Unit	N	The Part Number depends on each individual destination		1		1								1														1			1	
		DZEA000058				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
⚠	1003	DZEC102026				1																											
		DZEC102281	PC Board, MJR	N	The Part Number depends on each individual destination	1		1									1					1		1	1	1	1	1	1	1	1	1	1	1	1
		DZEC102501					1																										
	1004	DZEC101999	PC Board, PWL1	N	The Part Number depends on each individual destination	1		1									1					1		1	1	1	1	1	1	1	1	1	1	1	1
		DZEC102283					1																1										
⚠	1005	DZEC102275	PC Board, ACI	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1006	DZEC102113	PC Board, ILS	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1007	DZEC102278	PC Board, SNS4	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1008	DZEC101075	PC Board, SNS1	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1009	DZEC101163	PC Board, SNS3	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1010	DZEC101076	PC Board, SNS2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		DZEC100492																															
		DZEC100493																												1			
		DZEC100494												1																			
	1011	DZEC100496	PC Board, SRU	C	The Part Number depends on each individual destination		1		1								1					1		1	1	1		1	1	1	1	1	1	1	1
		DZEC100497				1																											
		DZEC101627																															
		DZEC102449																		1												1	
		DZEC102450																															
		DZEC102451		N		1	1	1	1	1	1	1	1	1	1	1		1	1	1	1			1	1	1	1	1	1		1	1	1	1	1
	1012	DZEC101184	PC Board, CST2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1013	DZEC101076	PC Board, SNS2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1015	DZFP001212	Harness, SC-PSU	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1016	DZFP000723	Harness, SC-SFK	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1017	DZFP001217	Harness, SC-SNS4	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks	AA	AB	AG	AH	AJ	AK	AL	AM	AP	AR	AT	AU	AV	AW	HB	EN	YA	YC	YF	YG	YH	YJ	YM	YR	YS	YT	YV	YW	YX
	1018	DZFP000731	Harness, SC-SNS3	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1019	DZFP001251	Harness, SC-CCD	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1020	DZFP001216	Harness, SC-TXMOT	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1021	DZFP001218	Harness, SC-ILS	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1022	DZFP001213	Harness, SC-LSD	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1023	DZFP001223	Harness, SC-LSU 2	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1024	DZFP001222	Harness, SC-LSU 1	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1025	DZFP000724	Harness, SC-RXMOT	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1026	DZFP001215	Harness, SC-PNL	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1027	DZFP001214	Harness, SC-MJR	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1028	DZFP001220	Harness, PSU-FUSER	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1029	DZFP000728	Harness, SNS1-SNS4	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1030	DZFP000732	Harness, SNS1-SNS2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1031	DZFP000730	Harness, SNS3-TNR	C	The Part Number depends on each individual destination	1	1	1	1	1	1	1	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		DZFP001242	Harness, SNS3-TNR	N		-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1032	DZFP001219	Harness, PSU-C-D	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1033	DZFP001221	Harness, PSU-T	N		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1034	DZFP000716	Harness, SC-CST2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1035	DZFP000717	Harness, CST2-SNS2	C		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Fig. 10: PC Board / Harness

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7.12. Packing and Accessories

Safety Mark	Ref. No.	Part Number	Part Name	New Parts	Remarks
	1101	DZKB000630	Carton Box	N	
		DZKB000641			
		DZKB000646			
	1102	DZKH000431	Cushion Assembly Set	N	
	1103	DZKH000324	Pad, Cassette	C	
	1105	DZKD000008	Box, Accessories	C	
	1107	DZML000300	Assembly, Recording Paper Tray	C	
⚠		DZFW000027 or			
		DZFW000018			
		DZFW000028 or			
		DZFW000004			
		DZFW000030			
		DZFW000031 or			
		DZFW000009			
	1108	DZFW000032 or	Power Cord	C	The Part Number depends on each individual destination
		DZFW000010			
		DZFW000043 or			
		DZFW000065			
		DZFW000061			
		DZFW000064 or			
		DZFW000017			
		DZFW000017 or			
		DZFW000064			
		DZFW000015 or			
		DZFW000026			
		DZFW000016			
		DZFW000017			
		DZFW000030			
	1109	DZFW000050	Telephone Line Cable	C	The Part Number depends on each individual destination
		DZFW000069			
		DZFW000078			
		DZFW000095			
		DZFW000096			
		DZFW000104			
		DZFW000114			
		DZSD001524			
		DZSD001528			
		DZSD001530			
		DZSD001527			
		DZSD001529			
		DZSD001531			
		DZSD001532			
	1110	DZSD001533	Operating Instructions	N	The Part Number depends on each individual destination
		DZSD001538			
		DZSD001539			
		DZSD001540			
		DZSD001541			
		DZSD001542			
		DZSD001543			
		DZSD001566			
		DZSD001568			
		DZSD001570			

Destination columns: AA AB AE AG AE AJ AK AL AM AP AR AT AU AV AW EM ER YA YC YG YH YJ YM YR YS YT YV YW YX

Safety Mark	Ref. No.	Part Number		Part Name	New Parts	Remarks	AA	AB	AE	AG	AH	AJ	AK	AL	AM	AP	AR	AT	AU	AV	AW	EE	EN	YA	YC	YF	YG	YH	YJ	YM	YR	YS	YT	YV	YW	YX
		DZFB000001					-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZFB000009	or				-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZFB000010					-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZFB000022					1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1111	DZFN000105		PTT Plug	C	The Part Number depends on each individual destination	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZFN000107					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZFN000108					-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZFN000109					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZFN000119	or				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZFN000020					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
	1112	DZQN000003		Rozsette	C	The Part Number depends on each individual destination	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		DZQN000005					-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZRQ000047	or	CD-R	N	The Part Number depends on each individual destination	1	1	1	1	1	1	1	1	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1113	DZRQ000048		CD			1	1	1	1	1	1	1	1	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		DZRQ000049	or	CDR			-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZRQ000050		CD			-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1114	DZRQ000058		CD-R(O/I)	N		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
	1115	DZSH000112		License Agreement	C	The Part Number depends on each individual destination	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		DZSH000113					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Fig. 11: Packing and Accessories

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8 Installation

8.1. Function Key

Any function can be started by first pressing FUNCTION and then enter the function number, or by pressing ▼ or ▲ scroll key repeatedly until the desired function appears on the display.

① **Deferred Communication**
1 = XMT
2 = Polling

② **Advanced Communication**
1 = Not Used
2 = Confidential Communication

③ **Polling**
1 = Polling
2 = Polled

⑥ **Print List**
1 = Journal (Print/View)
2 = One-Touch/Abbreviated/Directory Search List
3 = Program List
4 = Fax Parameter List
5 = Not Used
6 = Individual XMT Journal
7 = Directory Sheet

⑦ **Set Mode**
1 = User Parameters
    • Date & Time
      Logo
      Character ID
      ID Number (Fax Telephone Number)
2 = One-Touch/Abbreviated Numbers
3 = Program Keys
4 = Fax Parameters
5 - 7 = Not Used
8 = Maintenance
      Cleaning Printer Roller
      Toner Order Forms
      Firmware Update (See Note 1)

⑧ **Select Mode**
1 = Communication Journal = OFF/ON/INC
2 = Not Used
3 = Cover Sheet = OFF/ON
4 = Password-XMT = OFF/ON
5 = RCV to Memory = OFF/ON
6 - 8 = Not Used
9 = Memory XMT = OFF/ON

⑨ **Edit File Mode**
1 = File List (Print/View)
2 = Change Time/Station
3 = Delete File
4 = Print File
5 = Add Document
6 = Retry Incomplete File

NOTE 1. *Refer to the Firmware Update Utility's Operating Instructions on the software CD for additional details.*

8.2. Main Unit and Accessories

Unpack the carton and check that you have all the accessories illustrated.

Machine

Toner Cartridge

Recording Paper Tray

Telephone Line Cable

Power Cord

Operating Instructions

CD-ROM
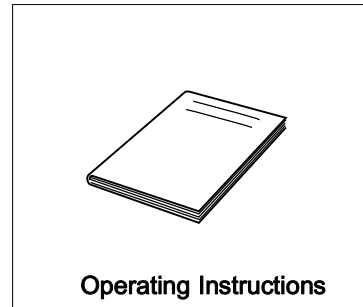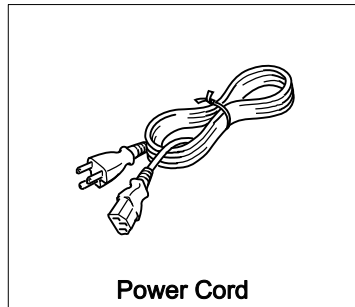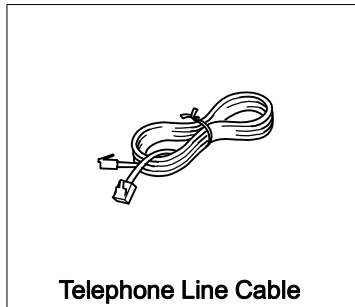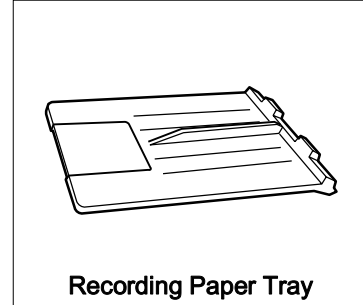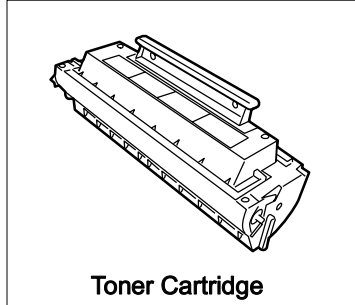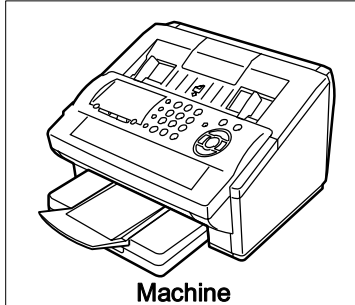
8.3. Installing the Accessories

Final Installed View

Recording Paper Tray
Hook the projections into the square
holes on the machine.

Handset
[Available as an Option]

Handset Cord
[Available as an Option]

TEL/HANDSET

Handset Cradle *[Available as an Option]*
Hook the projections into the square holes on the machine.
Connect the cable into the HANDSET jack on the machine.
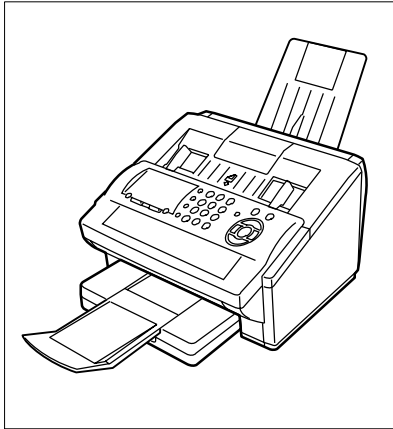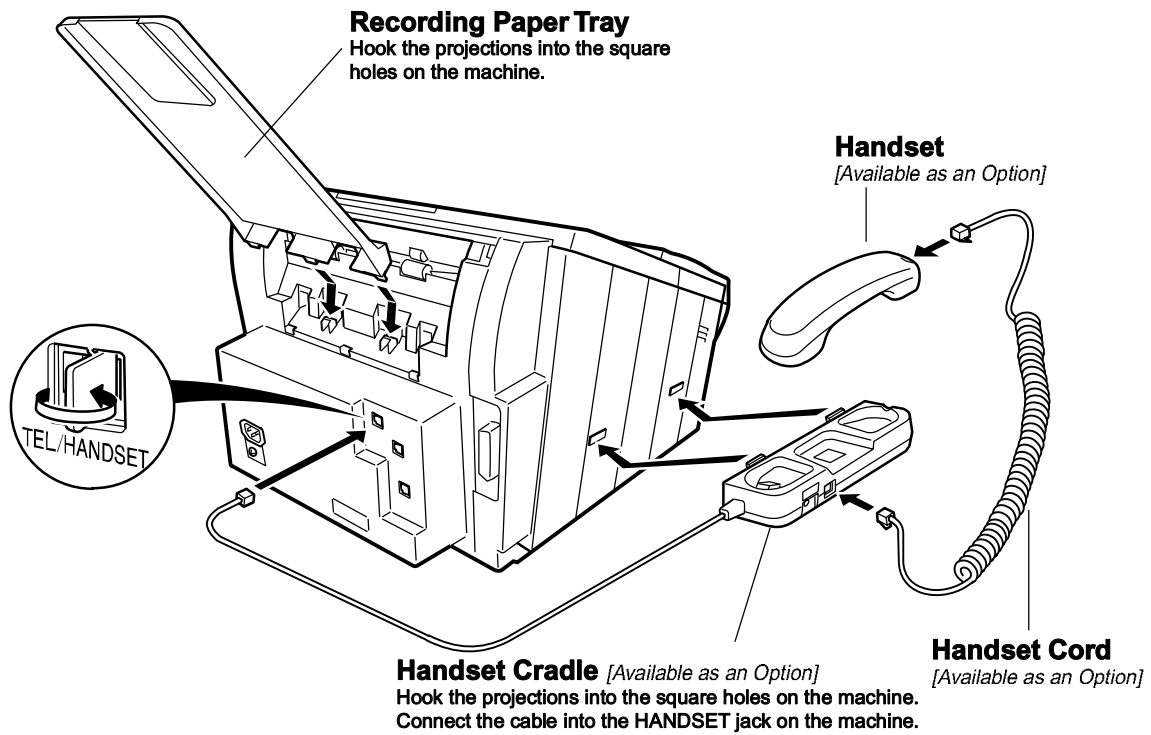
NOTE   *The handset may not be available in certain destinations due to its regulation or specification.*

8.4. Installing the Toner Cartridge

1
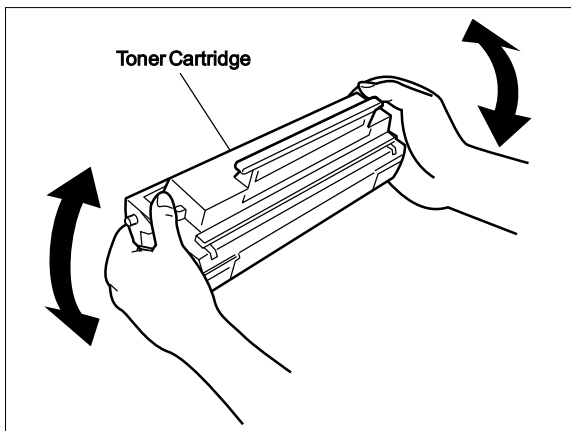
Unpack the Toner Cartridge and rock it back and forth as shown for 5 or 6 times to even the toner inside.

2
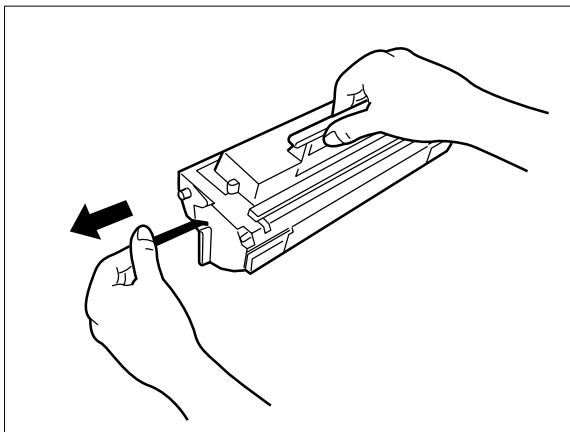
Remove the protective seal.
> **Note:** Pull on the seal slowly and straight out.

3
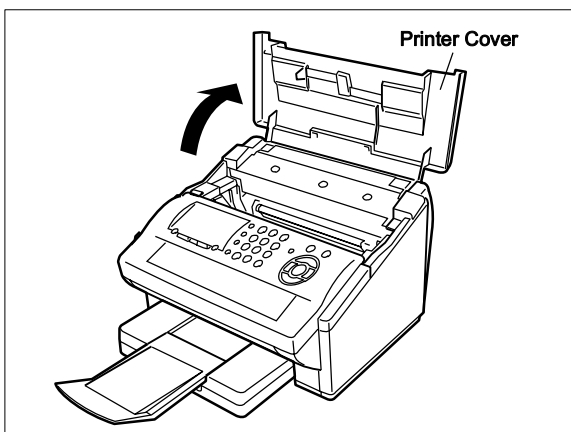
Open the Printer Cover.

Continued on the next page...

4
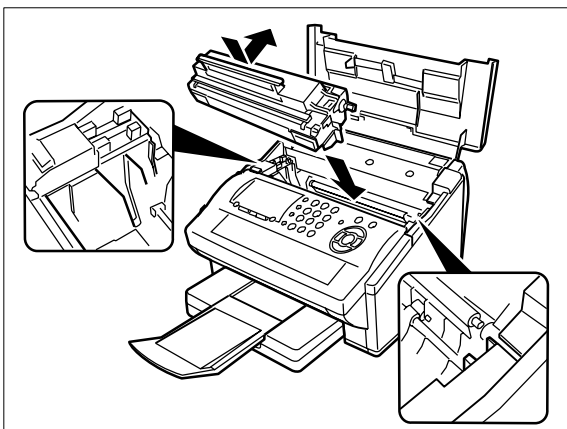
Align the projections on both sides of the Toner Cartridge with the grooves in the machine as shown and insert the Toner Cartridge into the machine.

> **Note:** Lock the Toner Cartridge into place by pressing the handle down and then pushing towards the rear of the machine.

5
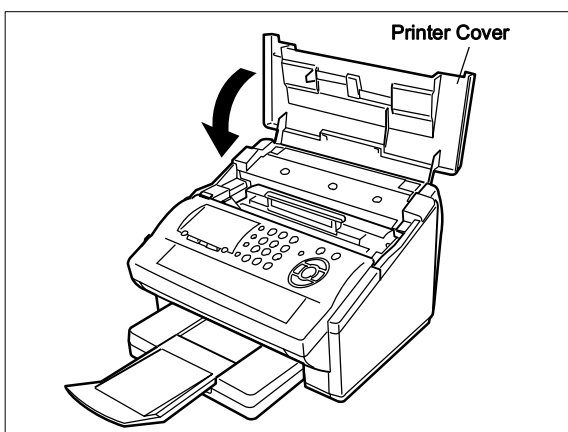
Printer Cover

Close the Printer Cover.

6

If you are replacing the Toner Cartridge, it is recommended to clean the Printer Roller to maintain good printing quality. To clean the Printer Roller, follow the procedure on next page.

Cleaning the Printer Roller

If you find toner on the back of the recording paper, the printer roller in the fuser unit is probably dirty.

To clean the Printer Rollers

1   COPY / SET   7   8   □
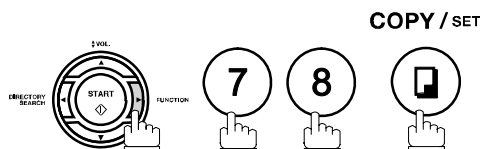
```
MAINTENANCE      (1-9)
ENTER NO. OR
```

2   COPY / SET   1   □   1
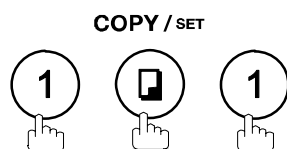
```
* PRINTING *
CLEANING CHARTS
```

The machine will print out 3 Cleaning Charts.
Then, return to standby.

```
              <PRINTER ROLLER CLEANING CHART>

   HOW TO LOAD THE CLEANING CHARTS
   1.REMOVE THE PAPER CASSETTE
     (If multiple cassette configuration, REMOVE THE UPPER PAPER CASSETTE)
   2.SET THESE 3 CLEANING CHARTS IN THE CASSETTE FACE DOWN
   3.RE-INSTALL THE PAPER CASSETTE
   4.PRESS [FUNCTION][7][8][SET][1][SET][2]
     TO START CLEANING
   5.DISPOSE OF THE CLEANING CHARTS




         *** SET THIS END TOWARDS THE FRONT, FACE DOWN ***
```
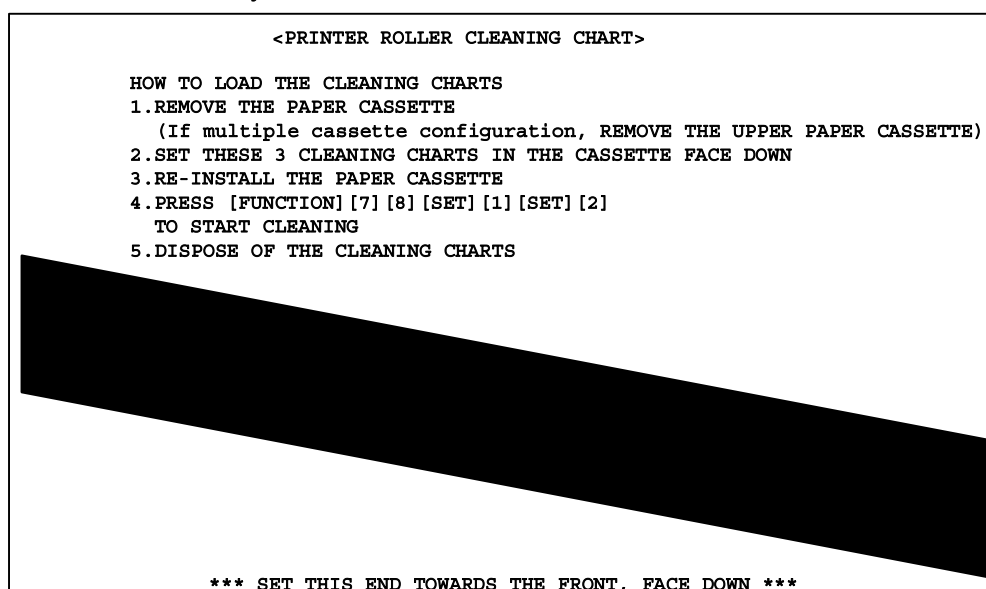
3   Load the Cleaning Charts into the cassette face down.
(See Note 1)

4   COPY / SET   7   8   □
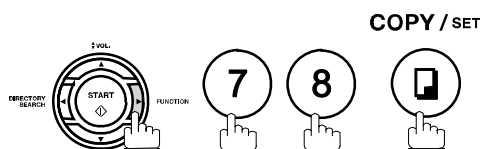
```
MAINTENANCE      (1-9)
ENTER NO. OR
```

5   COPY / SET   1   □   2
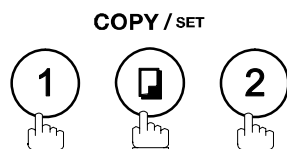
```
* CLEANING *
PRINTER ROLLER
```

The Machine will feed out the charts and clean the printer roller.

NOTE   *1. If you have installed the optional cassette(s), load the Cleaning Charts into the upper cassette.*

8.5. Loading the Recording Paper

How to Load the Recording Paper

1
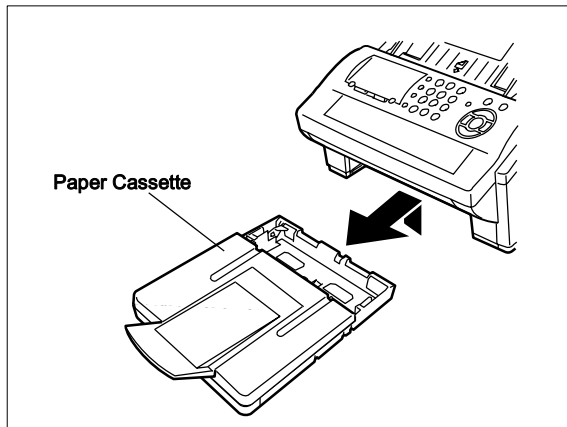
Lift up the Paper Cassette slightly and slide it out from the machine.

Paper Cassette

2
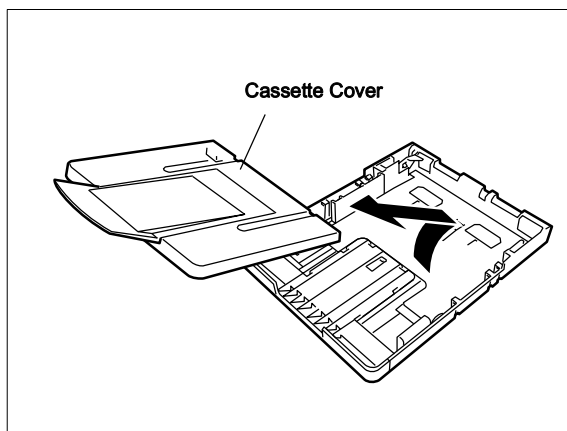
Remove the Paper Cassette Cover.

Cassette Cover

3
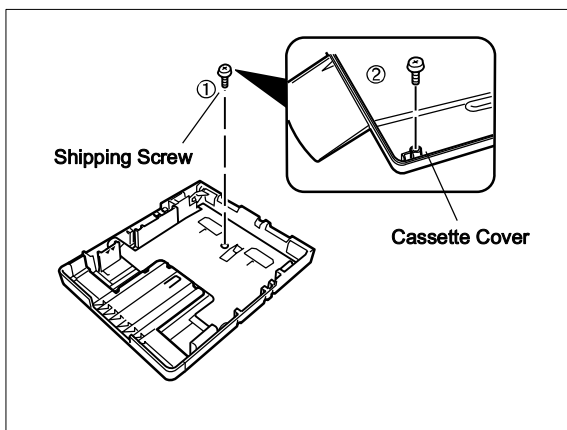
1. Remove the Shipping Screw securing the Pressure Plate.

2. Store the screw by attaching it to the post provided under the Paper Cassette Cover for future use.
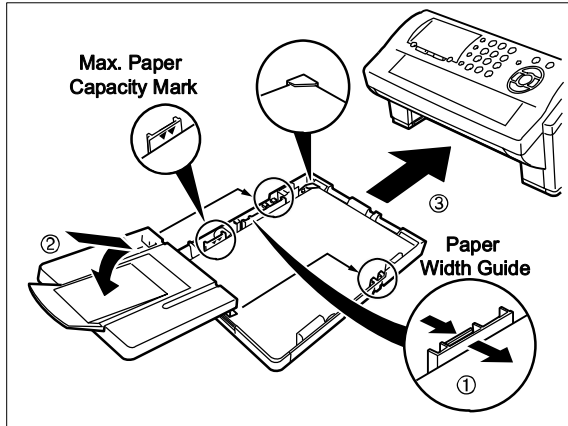
Shipping Screw

Cassette Cover

4

Max. Paper Capacity Mark

Paper Width Guide

1. Load the paper into the Paper Cassette. Slide the paper width guide to the left until it lightly touches the stack of paper without bending the paper. The paper must fit squarely and firmly between the Paper Width Guide and the right side of tray. If it does not, the paper may feed into the printer incorrectly resulting in a paper jam.

   Caution: Make sure that the paper is set under the metal Paper Separation Clips and that it does not exceed the Maximum Paper Capacity Mark. You can load about 250 sheets (20 lb weight).

2. Re-install the Paper Cassette Cover.

3. Slide the Paper Cassette into the machine.

8.6. Adjusting the Paper Cassette for the Paper Length

How to Adjust the Paper Cassette for the Paper Length

The factory default Paper Length setting for the Paper Cassette is on Letter size. To change the paper length to A4 or Legal size, follow the steps below.

1

Release Latch

Paper Length Guide

Paper Width Guide

Max. Paper Capacity Mark

LTR
A4
LGL

2
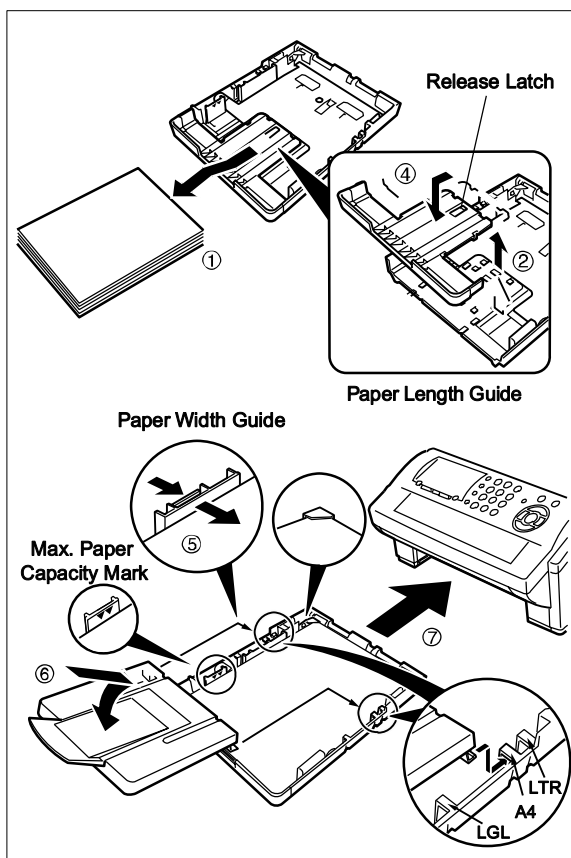
1. Remove the paper from the Paper Cassette and place the cassette upside down on a flat surface.

2. While pushing down on the release latch, pull out the Paper Length Guide.

3. Turn the Paper Cassette upright.

4. Insert the Paper Length Guide hooks into the appropriate paper length slots (A4 or Legal) and slide the guide towards the back of the cassette until it locks in place.

5. Load the paper into the Paper Cassette.

   Slide the paper width guide to the left until it lightly touches the stack of paper without bending the paper. The paper must fit squarely and firmly between the Paper Width Guide and the right side of tray. If it does not, the paper may feed into the printer incorrectly resulting in a paper jam.

   Caution: Make sure that the paper is set under the metal Paper Separation Clips and that it does not exceed the Maximum Paper Capacity Mark. You can load about 250 sheets (20 lb weight).

6. Replace the Paper Cassette Cover to the appropriate paper position (LTR, A4 or LGL).

7. Slide the Paper Cassette into the machine.

The Recording Paper Size setting of the Fax Parameter No. 23 must match the paper loaded in the cassette. If you change the Recording Paper Size, please change the setting accordingly.

NOTE

1. *If you forget to change the Recording Paper Size setting in Fax Parameter No. 23 when different paper is installed in the cassette, the unit will Stop printing after the 1st page of an Incoming Fax and display a "PAPER SIZE MISMATCH" error. Then, the Recording Paper Size setting automatically adjusts to the proper size and the unit resumes printing the Incoming Fax from the 1st page.*

8.7. Adjusting the Paper Cassette for the Paper Width

How to Adjust the Paper Cassette for the Paper Width

The factory default Paper Width setting for the Paper Cassette is on Letter/Legal size. To change the paper width to A4 size, follow the steps below.

1

Paper Separation Clip
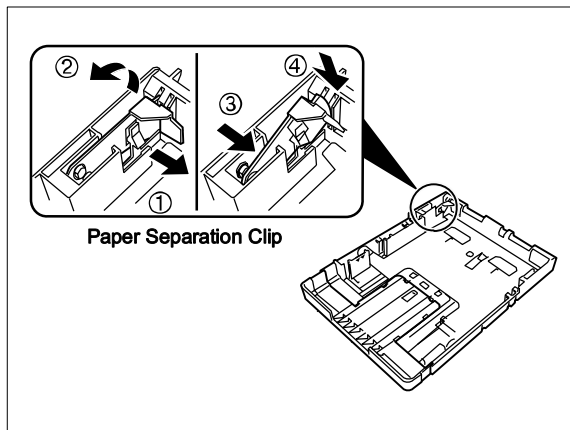
1. Release the left Paper Separation Clip latch.

2. Pull up the Paper Separation Clip to remove it.

3. Reposition the Paper Separation Clip into the A(A4) slot.

4. Swing the Paper Separation Clip downward to latch it in place.

2
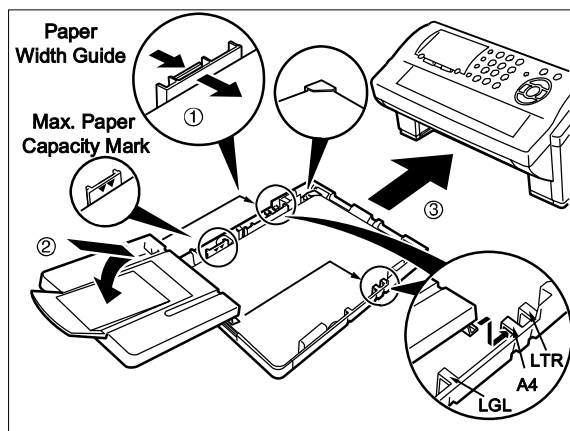
Paper Width Guide

Max. Paper Capacity Mark

1. Load the paper into the Paper Cassette. Slide the paper width guide to the left until it lightly touches the stack of paper without bending the paper. The paper must fit squarely and firmly between the Paper Width Guide and the right side of tray. If it does not, the paper may feed into the printer incorrectly resulting in a paper jam.

   Caution: Make sure that the paper is set under the metal Paper Separation Clips and that it does not exceed the Maximum Paper Capacity Mark. You can load about 250 sheets (20 lb weight).

2. Replace the Paper Cassette Cover to the appropriate paper position (LTR, A4 or LGL).

3. Slide the Paper Cassette into the machine.

3

The Recording Paper Size setting of the Fax Parameter No. 23 must match the paper loaded in the cassette. If you change the Recording Paper Size, please change the setting accordingly.

NOTE
1. *If you forget to change the Recording Paper Size setting in Fax Parameter No. 23 when different paper is installed in the cassette, the unit will Stop printing after the 1st page of an Incoming Fax and display a "PAPER SIZE MISMATCH" error. Then, the Recording Paper Size setting automatically adjusts to the proper size and the unit resumes printing the Incoming Fax from the 1st page.*

8.8. Connecting the Telephone Line Cable and Power Cord

Power Cord

Plug one end of the power cord into an ordinary 3 prong AC outlet and the other end into the receptacle on the rear of the machine.

**Warning: This apparatus must be properly grounded through an ordinary 3 prong AC outlet.
Do not break off the earth (ground) prong to fit a 2 prong outlet.**

TEL/HANDSET

Power Cord (Included)

■ External Telephone (Optional)
You can connect an additional standard single line telephone to the machine. To connect the telephone, break off the protective tab on the TEL jack.

Telephone Line Cable (Included)

RJ-11C Telephone Jack
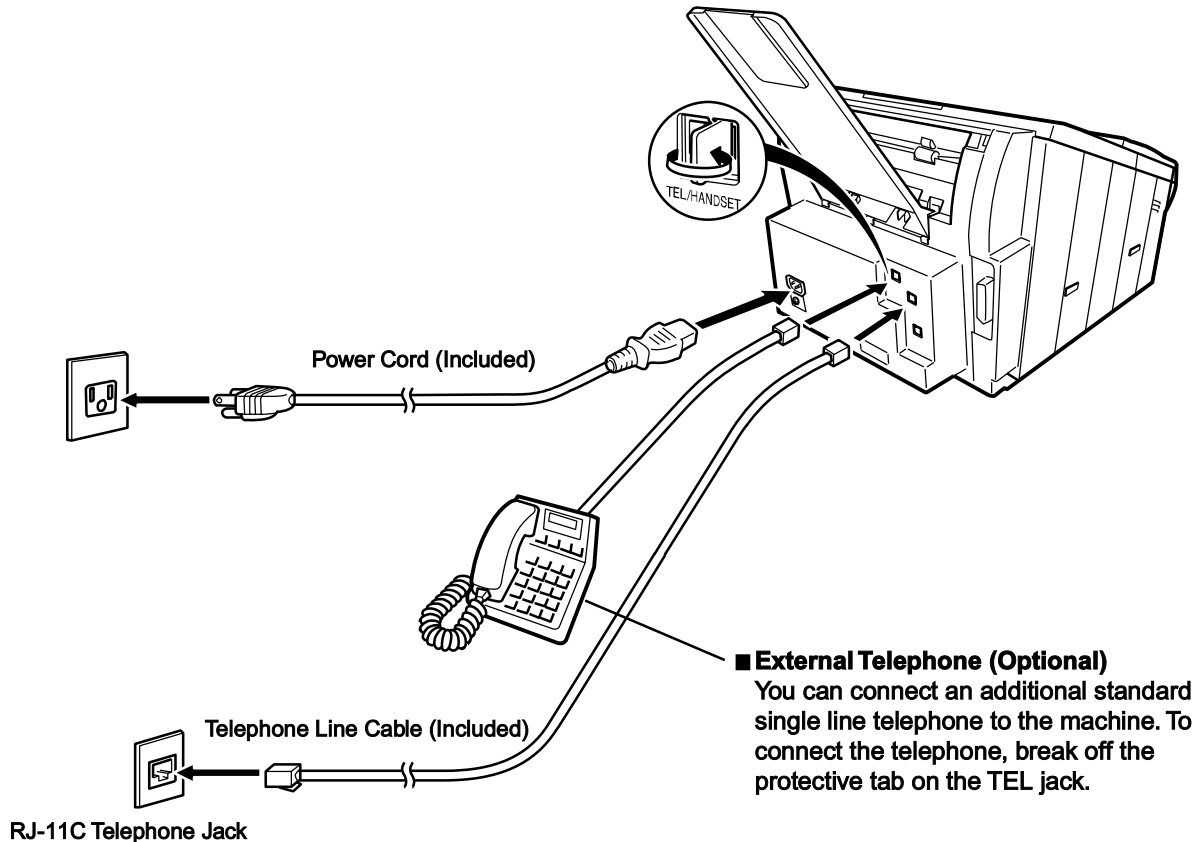
Telephone Line Cable

Plug one end of the telephone line cable into the "RJ-11C" telephone jack supplied by the telephone company and the other end into the LINE jack on the left side of the machine.

NOTE

1. Your machine uses little power and you should keep it ON at all times. If the power is turned OFF for too long, the clock contents may be lost.

8.9. Customizing Your Machine

General Description

Your facsimile machine has a variety of adjustable Fax Parameters. These parameters, listed in the Parameter Table, are preset for you and do not need to be changed. If you do want to make a change, read the table carefully. Some parameters, such as the Resolution and Contrast parameters, can be temporarily changed by simple key operation just before a transmission is made. When the transmission ends, however, these parameters return to their preset values (Home position). Other parameters can only be changed by the procedure described below.

Setting the Fax Parameters

1
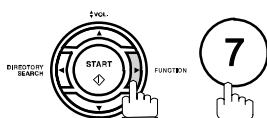
```
SET MODE      (1-8)
ENTER NO. OR ∨ ∧
```

2   COPY / SET
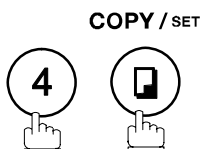
```
FAX PARAMETER (01-99)
    NO. = ■
```

3   Enter Fax Parameter number from the Parameter Table.
Ex: ⓪ ① for **CONTRAST**

```
FAX PARAMETER (01-99)
    NO. = 01
```

4   COPY / SET

```
01 CONTRAST
 1 : NORMAL
```

5   Enter the new setting value.
Ex: ② for **LIGHTER**

```
01 CONTRAST
 2 : LIGHTER
```

6   COPY / SET

```
02 RESOLUTION
 1 : STANDARD
```

To set another parameter, press ⌈CLEAR⌉ to return to step 3 or press ⌈ STOP ⌉ to return to standby.

(NOTE)   *1. To scroll the Fax Parameters in Step 2 or 4, press* ▼ *or* ▲ .

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Fax Parameter Table

No.	Parameter	Setting Number	Setting	Comments
01	CONTRAST	*1	Normal	Setting the home position of the CONTRAST key.
		2	Lighter	
		3	Darker	
02	RESOLUTION	*1	Standard	Setting the home position for the RESOLUTION.
		2	Fine	
		3	S-Fine	
		4	Halftone (Fine)	
		5	Halftone (S-Fine)	
04	STAMP	*1	Off	Setting the home position of the STAMP key. To select the stamp function when document is stored in memory, see Fax Parameter No. 28.
		2	On	
05	MEMORY	1	Off	Setting the home position for memory transmission/copy mode. (This setting can be temporarily changed by using F8-9 (MEMORY XMT))
		*2	On	
06	DIALING METHOD	1	Pulse	Selecting the dialing method.
		*2	Tone	
07	HEADER PRINT	*1	Inside	Selecting the printing position of the header. **Inside** : Inside TX copy area. **Outside** : Outside TX copy area. **No print** : Header is not printed.
		2	Outside	
		3	No print	
08	HEADER FORMAT	*1	Logo, ID No.	Selecting the header format.
		2	From To	
09	RCV'D TIME PRINT	*1	Invalid	Selecting whether the machine prints the received date & time, remote ID, percentage of reduction and page number on the bottom of each received page.
		2	Valid	
10	KEY/BUZZER VOLUME	1	Off	Selecting the volume of the Key/Buzzer tone.
		*2	Soft	
		3	Loud	
12	COMM. JOURNAL	1	Off	Selecting the home position of printout mode for COMM. Journal Off/Always/INC. **Off** : Does not print **Always** : Always prints **Inc. only** : Prints only when communication has failed.
		2	Always	
		*3	Inc. only	
13	AUTO JOURNAL PRINT	1	Invalid	Selecting whether the machine prints the journal automatically after every 32 transactions.
		*2	Valid	
17	RECEIVE MODE	1	TEL	Setting the receive mode.
		*2	FAX	
		3	FAX/TEL SW.	
		4	TAM/FAX	

No.	Parameter	Setting Number	Setting	Comments
18	OPERATOR CALL TIMER	*1	20 sec.	Selecting the length of time that your machine signals (rings) for an incoming voice call in Fax/Tel Auto Switching mode.
		2	30 sec.	
		3	40 sec.	
		4	50 sec.	
19	OGM LENGTH (TAM I/F)	1	1 sec.	Setting for the OGM length of your TAM from 1 to 60 seconds. The machine will not start to detect SILENCE until the time setting has lapsed. (Default = 20 sec.)
		—	—	
		60	60 sec.	
20	SILENT DETECTION (TAM I/F)	1	Invalid	Selecting the Silent Detection Mode.
		*2	Valid	
22	SUBSTITUTE RCV	1	Invalid	Selecting whether the machine receives to memory when recording paper runs out, toner runs out or recording paper is jammed.
		*2	Valid	
23	RECORDING PAPER SIZE	1	A4	Setting the recording paper size installed in your machine.
		*2	Letter	
		3	Legal	
24	PRINT REDUCTION	1	Fixed	Selecting print reduction mode. **Fixed:** Reduce received document according to setting of Parameter No. 25. **Auto** : Reduce received document according to the length of received documents.
		*2	Auto	
25	REDUCTION RATIO	70	70%	Selecting fixed print reduction ratio from 70% to 100%. This parameter functions only when fixed print reduction is selected on Fax Parameter No. 24.
		---	---	
		*100	100%	
26	POLLING PASSWORD		(---)	Setting a 4-digit password for secured polling.
27	POLLED FILE SAVE	*1	Invalid	Selecting whether the machine retains the polled document in memory even after the document is polled once.
		2	Valid	
28	STAMP AT MEM. XMT	1	Invalid	Selecting whether the machine stamps the original documents when storing the documents into memory. (Depending on the Stamp setting on the Control Panel)
		*2	Valid	
31	INCOMPLETE FILE SAVE	*1	Invalid	Selecting whether the machine retains the document in memory if the document is not successfully transmitted.
		2	Valid	
32	COPY REDUCTION	1	Manual	Selecting whether the machine performs the copy reduction ratio automatically or manually. **Manual** : The machine will prompt you for the Zoom ratio (100% to 70%) when making copies. **Auto** : The machine will automatically determine the reduction ratio according to the length of the original document.
		*2	Auto	

No.	Parameter	Setting Number	Setting	Comments
34	ENERGY SAVER MODE	1	Off	To reduce the power consumption in standby, select either Energy-Saver or Sleep mode and specify the Delay Time (1 to 120 minutes) for the machine to enter into the selected mode.
		2	Energy-Saver	
		*3	Sleep	The Delay Timer setting is only available in the Energy-Saver or Sleep Modes. **Off** : The unit will remain in standby mode and consume more energy than when in Energy-Saver or Sleep modes. **Energy-Saver Mode** : Saves energy by consuming less power than when in standby mode by turning off the fuser unit after the specified time. **Sleep Mode** : This is the lowest power state that the machine enters after the specified time without actually turning off.
35	DAYLIGHT TIME	1	Invalid	Selecting whether the clock adjusts for Daylight Saving Time automatically. The built-in clock will advance 1 hour at 2:00 am on the first Sunday in April and fallback 1 hour at 2:00 am on the last Sunday in October.
		*2	Valid	
36	RING PATTERN DETECT (DRD) (See Note 2)	*1	Invalid	All ring patterns.
		2	Valid	Select a ring pattern for automatic answering. **1: A** Standard ring pattern. **2: B** Double ring pattern. **3: C** Triple ring pattern (Short-Short-Long). **4: D** All other triple ring patterns, except the type C described above.
37	RCV TO MEMORY		(----)	Enter a 4-digit password used to print out the received document in memory by using F8-5 (RCV TO MEMORY). When F8-5 is set to On, this parameter will not be shown on the LCD display.
38	ACCESS CODE		(----)	Enter a 4-digit Access Code to secure the machine from unauthorized use.
39	PIN CODE ACCESS	*1	None	Selecting the access method (Prefix or Suffix) to dial a number with PIN Code.
		2	Suffix	
		3	Prefix	
42	CONF. POLLED FILE SAVE	*1	Invalid	Selecting whether the machine saves the confidential polled file even after the file is polled once.
		2	Valid	
43	PASSWORD-XMT	*1	Off	Setting a 4-digit XMT-Password and selecting whether the machine performs and checks the XMT-Password of the receiving station when transmitting.
		2	On	
44	PASSWORD-RCV	*1	Off	Setting a 4-digit RCV-Password and selecting whether the machine performs and checks the RCV-Password of the transmitting station when receiving.
		2	On	
46	SELECT RCV	*1	Invalid	Selecting whether the machine performs selective reception.
		2	Valid	
47	REMOTE RECEPTION	1	Invalid	Selecting whether or not the machine accepts remote reception command.
		*2	Valid	
51	REMOTE DIAGNOSTIC	*1	Invalid	Selecting whether or not the machine accepts to update the firmware or Remote Diagnostics from the remote station. Please ask your Panasonic Authorized Dealer for details.
		2	Valid	

No.	Parameter	Setting Number	Setting	Comments
52	DIAGNOSTIC PASSWORD		(----)	Setting the password for Remote Diagnostic Mode. Please ask your Panasonic Authorized Dealer for details.
53	SUB-ADDRESS PASSWORD		(----)	Setting a 20-digit password for secured sub-address communication.
54	FAX FORWARD	*1	Invalid	Selecting whether the machine performs Fax Forwarding to the specified destination.
		2	Valid	
56	COVER SHEET	*1	Off	Setting the home position of the Cover Sheet parameter in the Select Mode.
		2	On	
58	LANGUAGE	*1	A-English	Selecting the language to be shown on the display and reports.
		2	C-French	
		3	Spanish	
63	PC-FAX RCV MODE	*1	Print	Selecting how the machine will execute the received Fax document(s). If the setting is set to either "Upload" or "Upload & Print" the machine cannot enter the Sleep Mode. **Print** : Print the received document(s). **Upload & Print** : Print the received document(s) and upload it's file. **Upload** : Upload the received document file.
		2	Upload & Print	
		3	Upload	
65	PRINT COLLATION	1	Invalid	Selecting whether the machine prints out documents in sequence.
		*2	Valid	
82	QUICK MEMORY XMT	1	Invalid	Selecting whether the machine performs Quick Memory Transmission. **Invalid** : Stores all documents into memory first before dialing the telephone number. **Valid** : Starts dialing the telephone number immediately after storing the first page.
		*2	Valid	
99	MEMORY SIZE (Flash Memory)	-	-	Displays the amount of base and optional memory installed. (Base Memory + Optional Memory)

NOTE
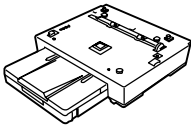
1. Setting number marked with an asterisk (*) indicates the factory standard setting.
2. This parameter supports an optional telephone service "Distinctive Ring Service" provided by your local telephone company. It allows up to 4 different telephone numbers to be assigned on a single telephone line with a distinctive ring for each telephone number. By selecting the appropriate ring pattern associated with the telephone number assigned for your fax machine. It can differentiate and answer the incoming call on the fax number. All other calls on the other telephone numbers will not be answered. This optional service from your local phone company is also called Custom Ringing, Distinctive Ringing, Ident-a-call, Ident-a-ring, Personalized Ringing, RingMaster, RingMate, Selective Ringing, Smart Ring or something similar. Check with your local telephone company on the availability of this service in your area.

9 Options and Supplies
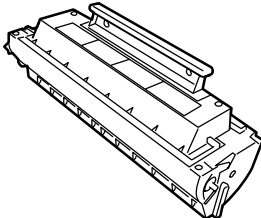
9.1 Options and Supplies

Please contact your local Panasonic dealer for availability.

1. Options

Order No.	Picture	Description
UE-403176		Handset Kit
UE-409070		250 Sheet Letter / Legal / A4 Size Paper Cassette with the Feeder Unit
UE-410046		Expansion Flash Memory Card, 2 MB
UE-410047		Expansion Flash Memory Card, 4 MB
UE-410048		Expansion Flash Memory Card, 8 MB

2. Supplies

Order No.	Picture	Description
DZHT000027 (For USA / Canada) DZHT000004		Verification Stamp
UG-5510 (For USA / Canada) UG-3350		Toner Cartridge

Note:

For some destinations, the Handset Kit may not be available because of the destination's regulation or specification.

9.2 Installing Optional 250 Sheet Paper Cassette (UE-409070)

1. Contents

Qty.	Description	Part No.	Remarks
1	250 Sheet Paper Cassette with Feeder Unit	UE-409070	

2. Installation

Note:
Install this Feeder Unit as the 2nd Feeder Unit only.
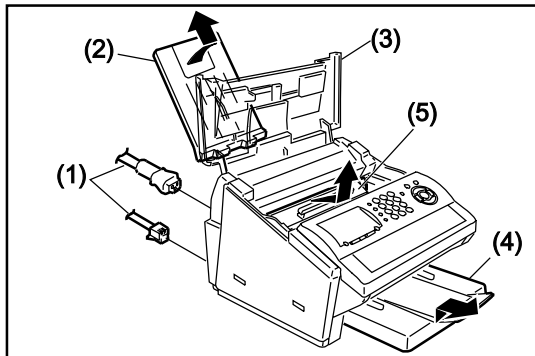
(1) Disconnect the **Telephone Line Cable** (1009) and the **Power Cord** (1008).
(2) Remove the **Recording Paper Tray Assembly** (1107).
(3) Open the **Printer Cover** (106).
(4) Remove the **Paper Cassette** from the machine.
(5) Remove the **Toner Cartridge** from the machine.
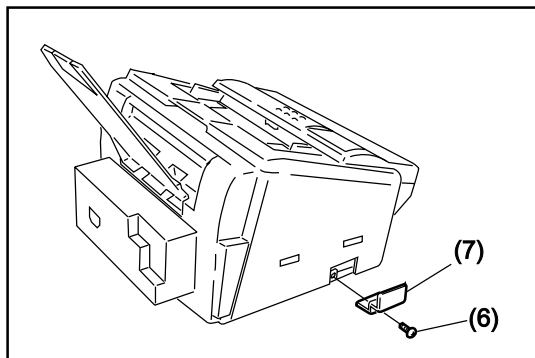
(6) Remove 1 **Screw** (B1).
(7) Remove the **Connector Access Cover** (114).
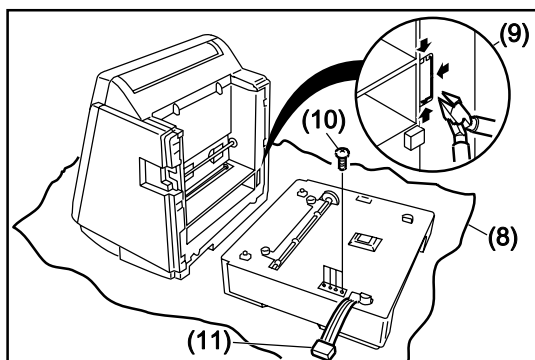
(8) Place the machine on its Rear side over a clean cloth to prevent damaging the Rear Cover.
(9) Break off the protective tab on the machine.
(10) Remove 4 **Screws** from the top of the 250 Sheet Paper Cassette.
(11) Remove the shipping tape and place the **CST2-SNS2 Harness** (1035) to the outside of the cassette.
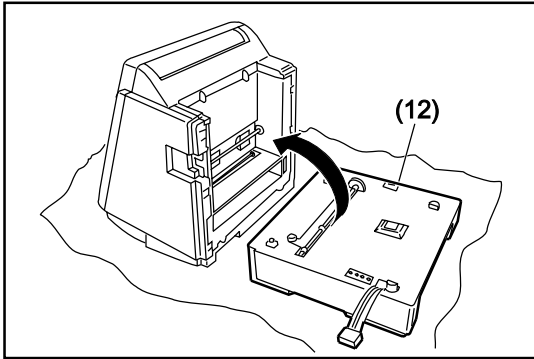
(12) Insert the 250 Sheet Paper Cassette into the machine.
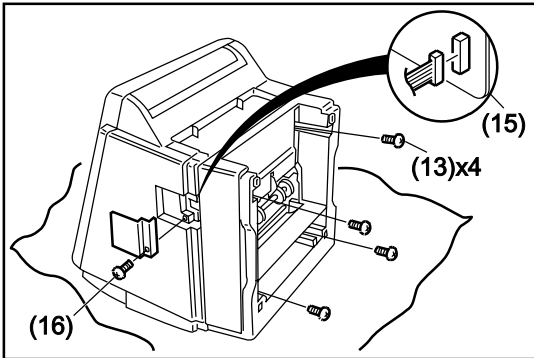
(13) Secure the 250 Sheet Paper Cassette with the 4 screws removed in step 10.

(14) Place the machine upright.

(15) Connect the **CST2-SNS2 Harness** (1035) into the **Connector CN66** on the SC PC Board.

(16) Re-install the **Connector Access Cover** (114).

(17) Re-install the **Recording Paper Tray Assembly** (1107), **Paper Cassettes** and the **Toner Cartridge**.

(18) Re-connect the **Telephone Line Cable** (1109) and the **Power Cord** (1108).

(19) Print some pages from the Optional Paper Cassette to confirm its operation.

9.3   Installing Handset Kit (UE-403176)

1. Contents

Qty.	Description	Part No.	Remarks
1	Handset	DZDU000031	
1	Handset Cord	DZFN000066	
1	Cradle Assembly	DZML000436	

2. Installation
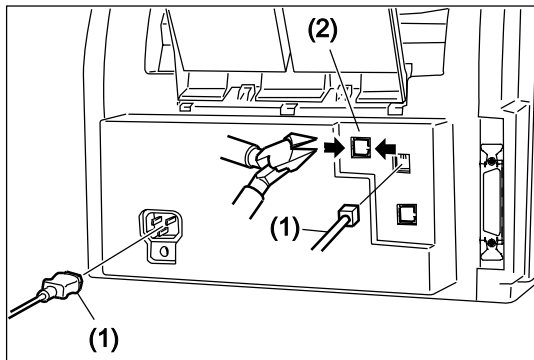
(1) Disconnect the **Power Cord** (1108) and the **Telephone Line Cable** (1109).
(2) Break off the protective tab on the **TEL/HAND-SET Jack** on the machine.
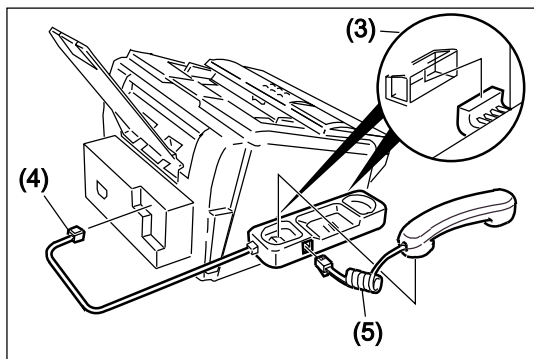
(3) Hook the projections of the Cradle Assembly into the holes on the Left Cover.
(4) Connect the **Cradle Cable** (123) to the **TEL/HANDSET Jack** on the rear of the machine.
(5) Connect the **Handset Cable** (121).
(6) Re-connect the **Telephone Line Cable** (1109) and the **Power Cord** (1108).

10 Schematic Diagram

10.1. General Circuit Diagram
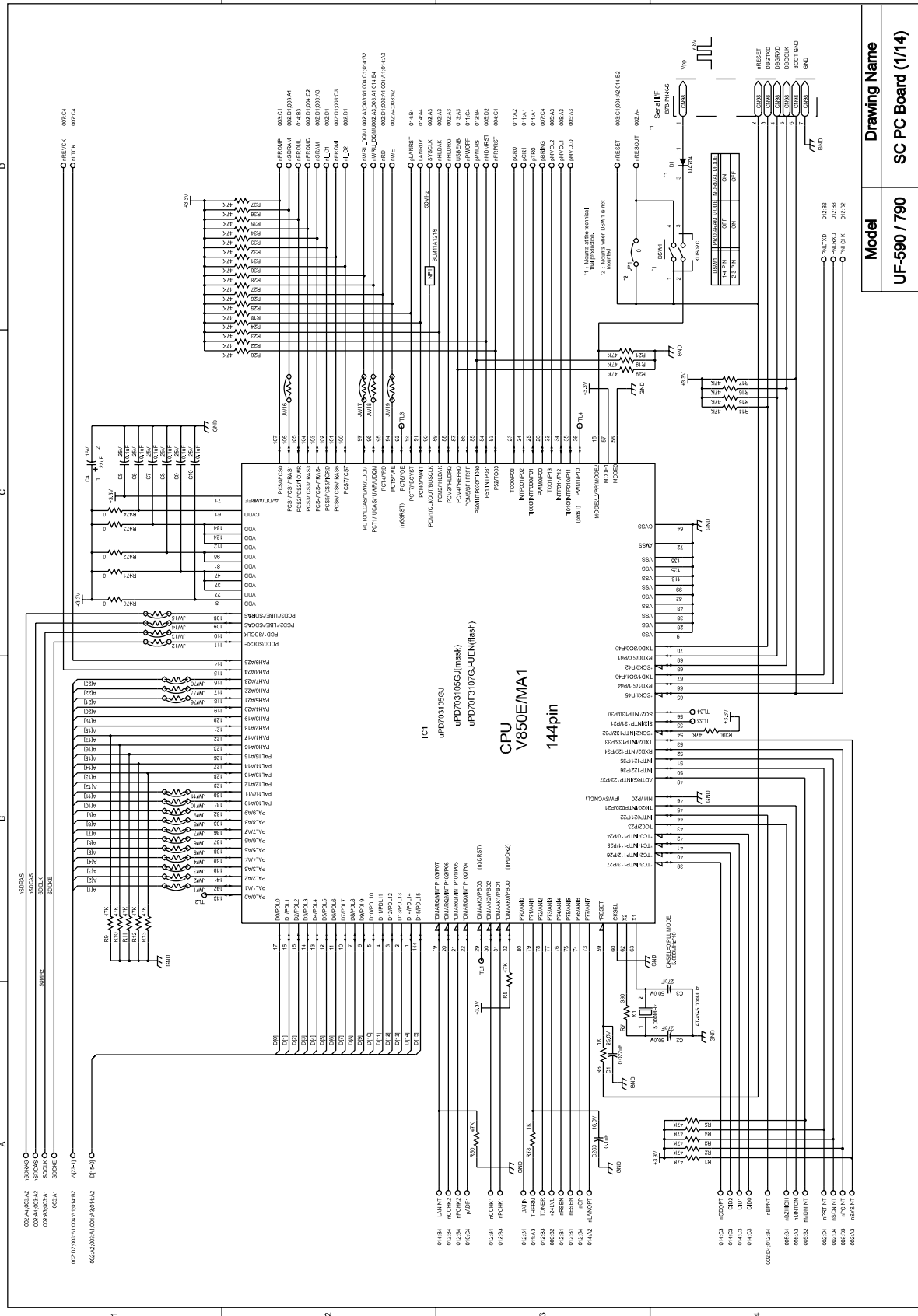
Model	Drawing Name
UF-590 / 790	General Circuit Diagram (1/2)

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Drawing Name: General Circuit Diagram (2/2)

Model: UF-590 / 790

10.2. SC PC Board

Model	Drawing Name
UF-590 / 790	SC PC Board (1/14)

SHINE

(System Handling and Image Navigation Engine)

208pin

Model	Drawing Name
UF-590 / 790	SC PC Board (2/14)

Drawing Name: **SC PC Board (3/14)**

Model: **UF-590 / 790**

Model	Drawing Name
UF-590 / 790	SC PC Board (5/14)

SC PC Board (6/14)

Drawing Name: SC PC Board (6/14)

Model: UF-590 / 790

270

NCU Interface Circuit

Model	Drawing Name
UF-590 / 790	SC PC Board (7/14)

Model: UF-590 / 790

Drawing Name: SC PC Board (8/14)
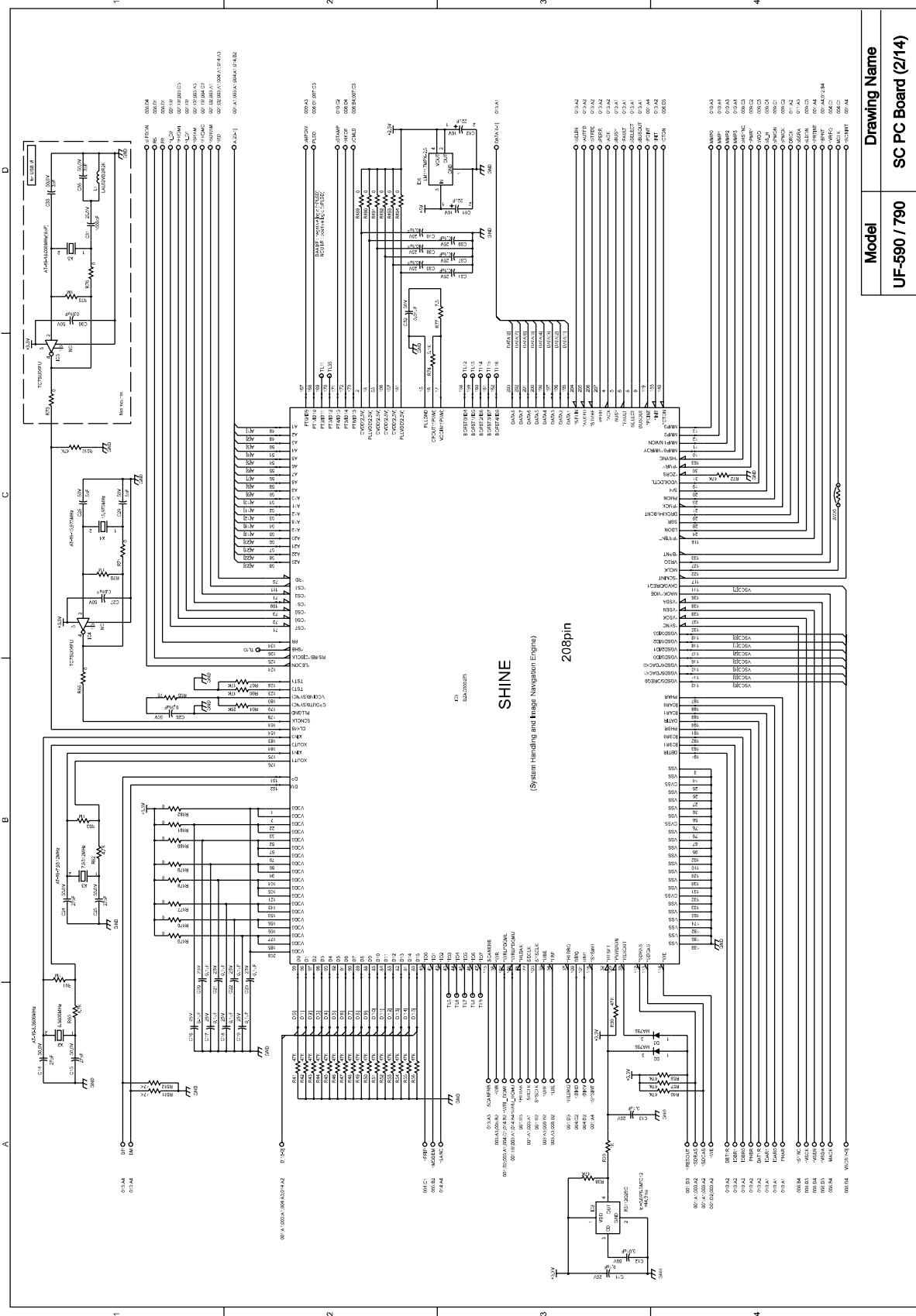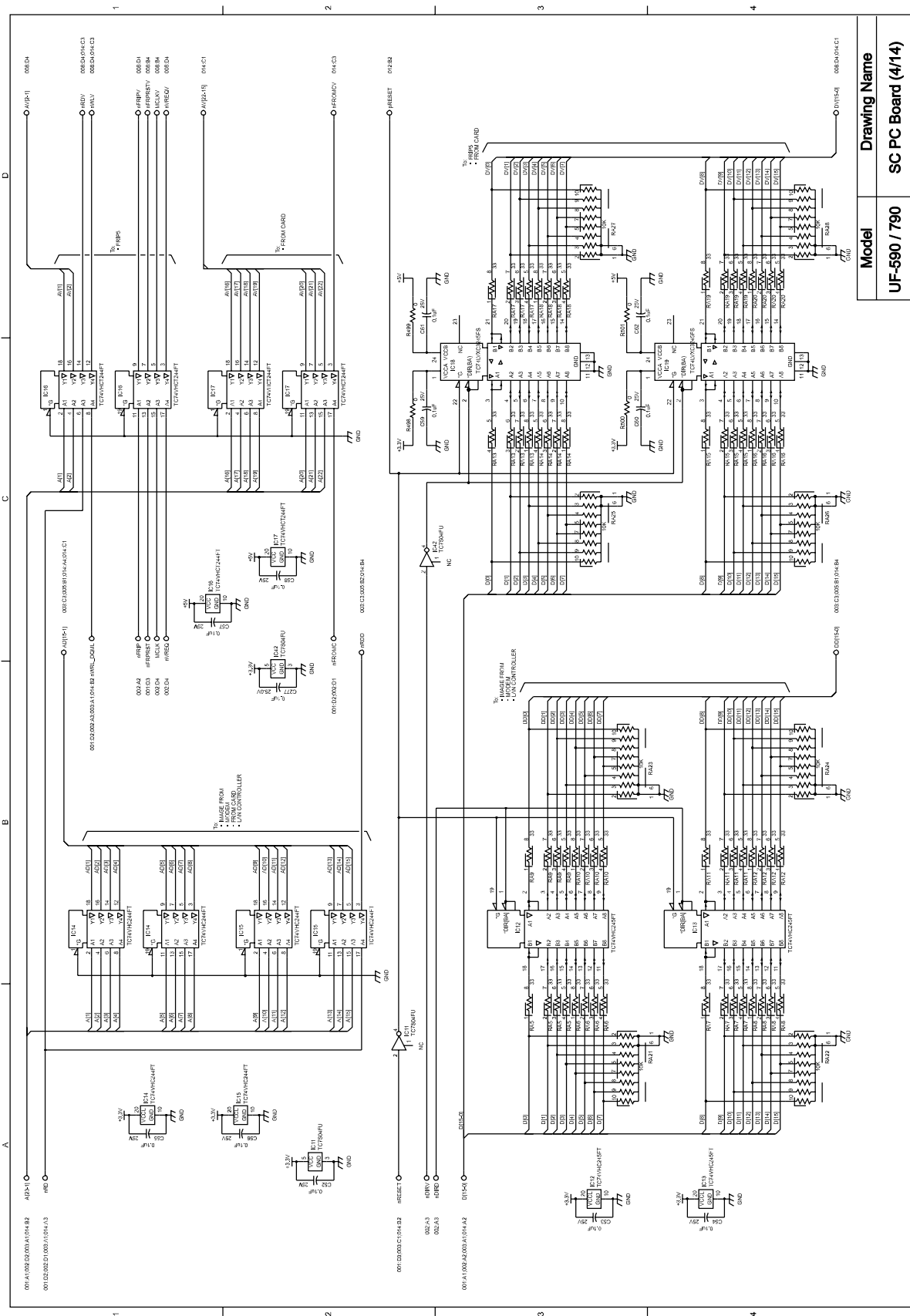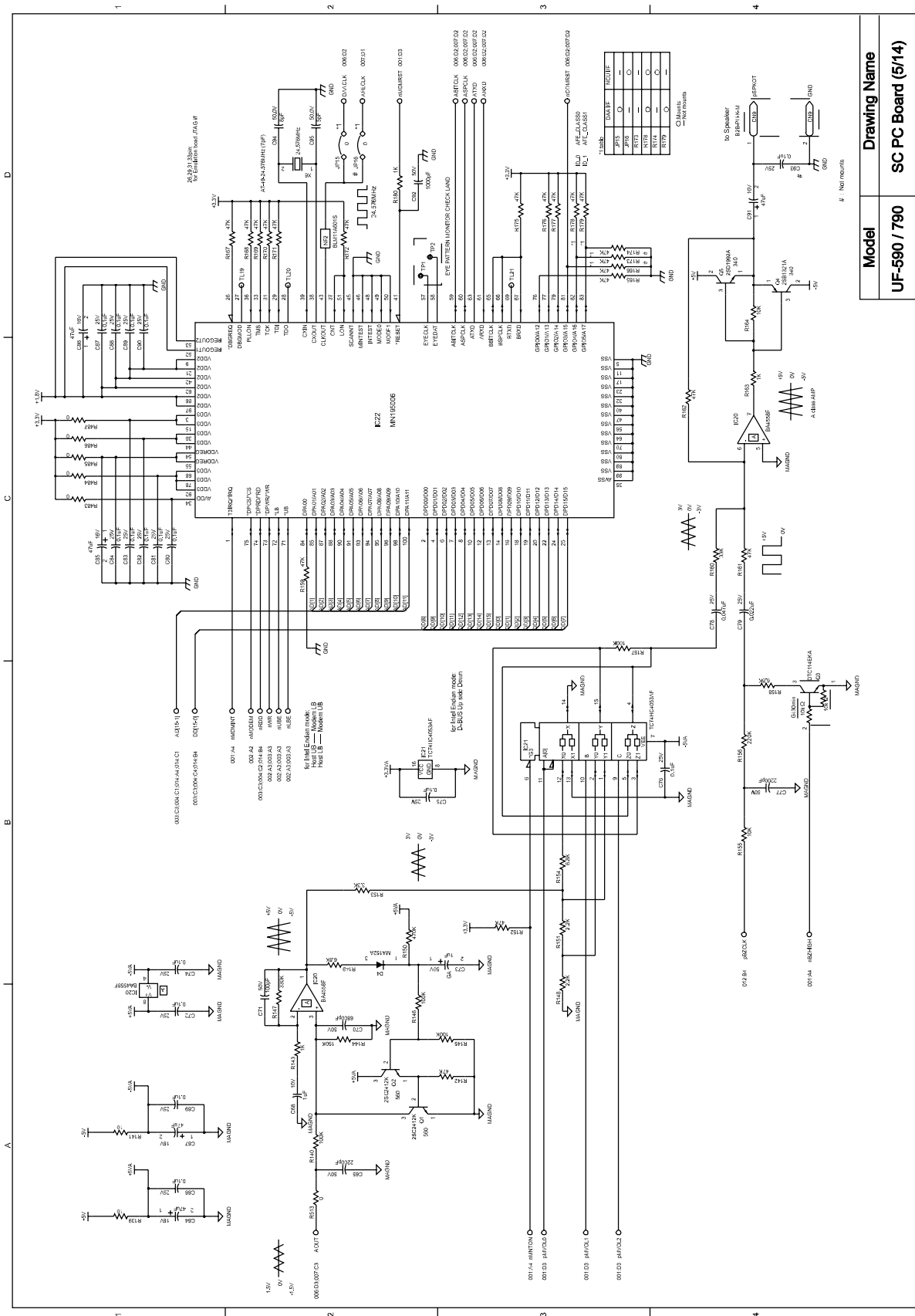
Model	Drawing Name
UF-590 / 790	SC PC Board (9/14)
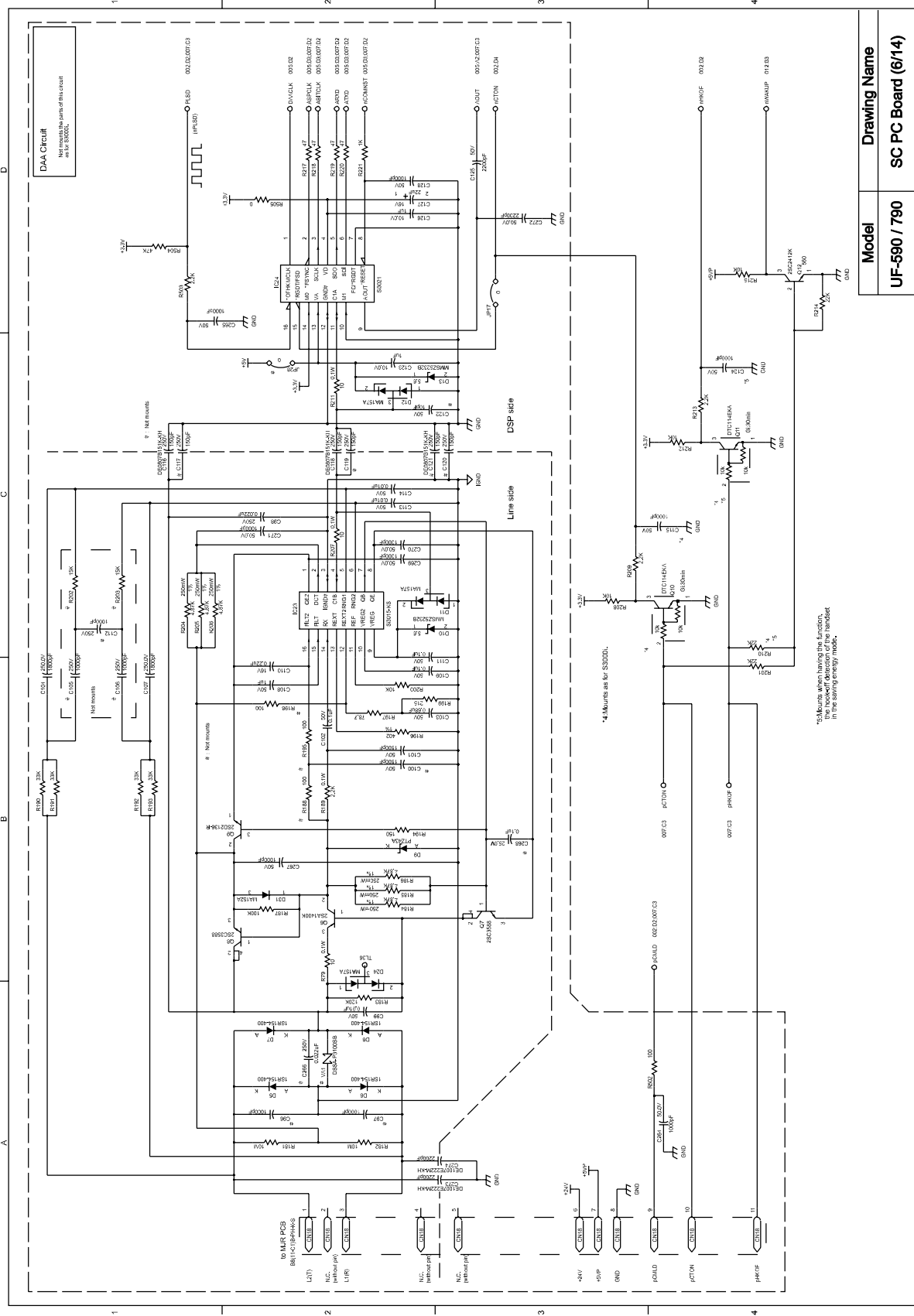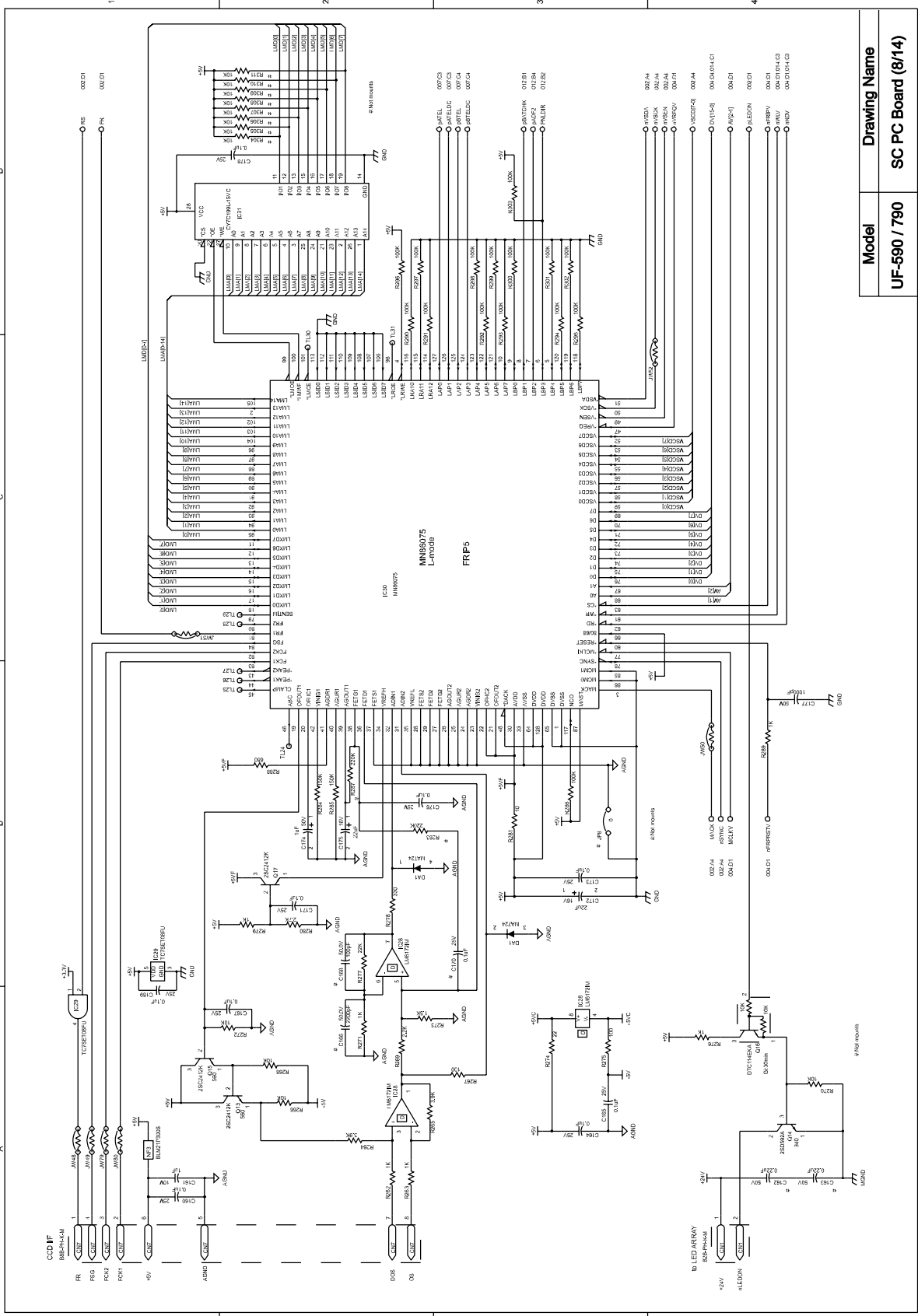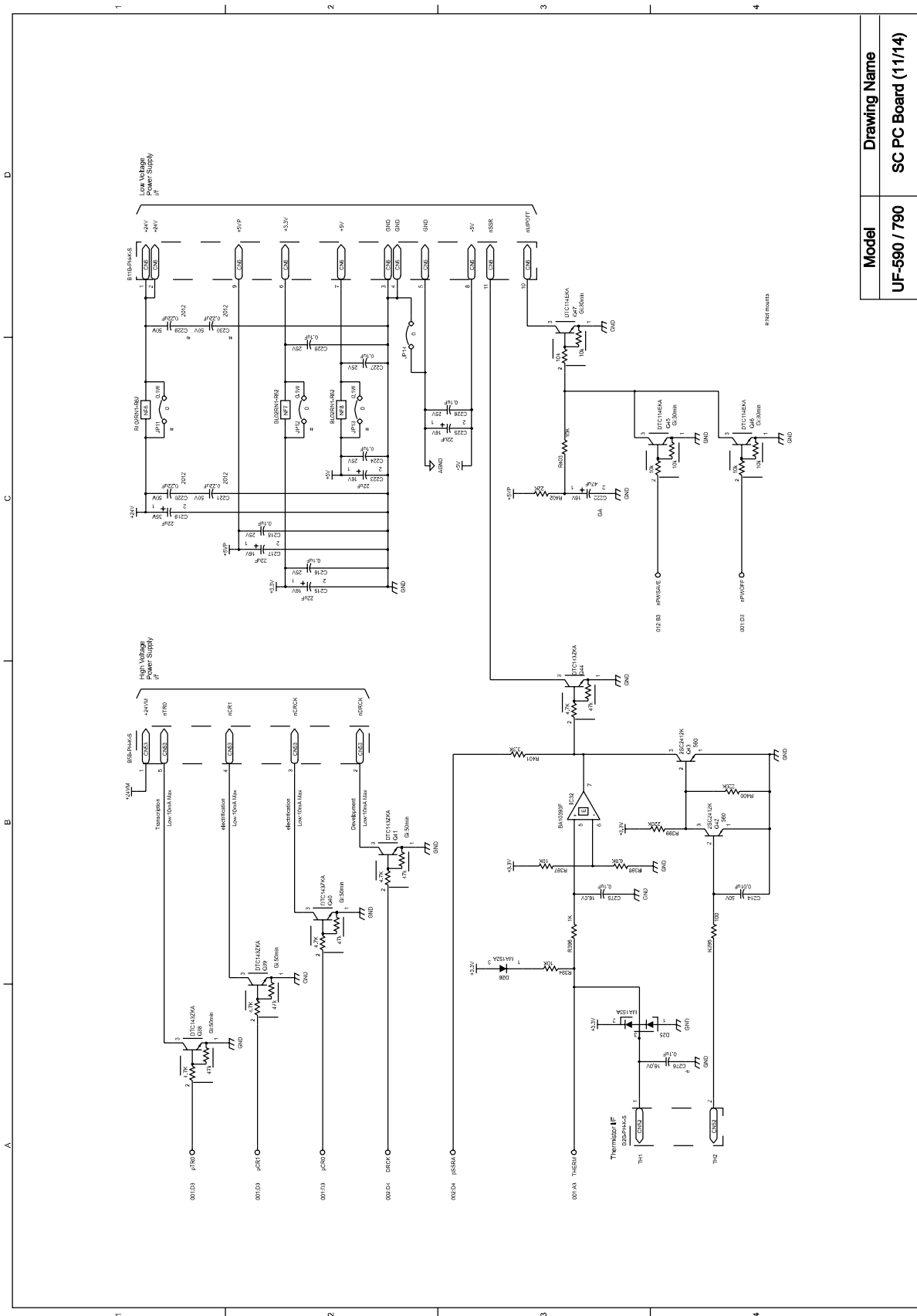
Model	Drawing Name
UF-590 / 790	SC PC Board (11/14)

Model	Drawing Name
UF-590 / 790	SC PC Board (12/14)

SC PC Board (13/14)

Model: UF-590 / 790

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SC PC Board (14/14)

Model UF-590 / 790

Drawing Name

10.3. PNL1 PC Board

Drawing Name

PNL1 PC Board (2/2)

Model

UF-590 / 790

*2: UF-L7 : Not mounts
DX-800 : Mounts

| INTERNET | ONLINE | STAMP | ALARM |

Switch labels: MEMORY/INTERNET, REDIAL/PAUSE, FLASH, STAMP, RESOLUTION, 13/S, D2/W, 12/A, CONTRAST, 24/C, 23/X, 22/Z, 01/Q, ABBR, MONITOR, 06/Y, D3/E, D5/T, D4/R, 15/F, 14/D, 26/B, 25/V, 07/U, 17/H, 18/J, 16/G, 27/N, 28/M, P7/*, COPY SET, CLEAR, STOP, 09/O, 10/P, 20/L, 08/I, 19/K, P2/L, PAUSE/SPACE, PAGE/SHIFT, DIR.SEARCH, FUNCTION, START, 21/Ø, TH/SYMBOL

10.4. MJR PC Board

10.5. SNS1 PC Board

B3B-PH-K-M

3 CN80	LDSC1	
2 CN80	GND	to SNS2
1 CN80	nCCHK1	

1 CN81	nCCHK1	
2 CN81	GND	to SNS4
3 CN81	nRSEN	
4 CN81	LDRE	

B4B-PH-K-M

CNA1003H01ME
PC1

Model	Drawing Name
UF-590 / 790	SNS1 PC Board (1/1)

10.6. SNS2 PC Board

B3B-PH-K-M

CNA1003H01ME
PC1

nCCHK1
GND
LDSC1

1 CN82
2 CN82
3 CN82

to SNS1(LPC)

Model	Drawing Name
UF-590 / 790	SNS2 PC Board (1/1)

10.7. SNS3 PC Board

to TONER

+5V 3 CN84

TONER 2 CN84

GND 1 CN84

B3B-PH-K-S

CNA1003H01ME

PC1

5 +5V CN83

4 TONER CN83

3 GND CN83

2 LDSP1 CN83

1 nPCHK1 CN83

B5B-PH-K-M

to LPC

Model	Drawing Name
UF-590 / 790	SNS3 PC Board (1/1)

10.8. SNS4 PC Board
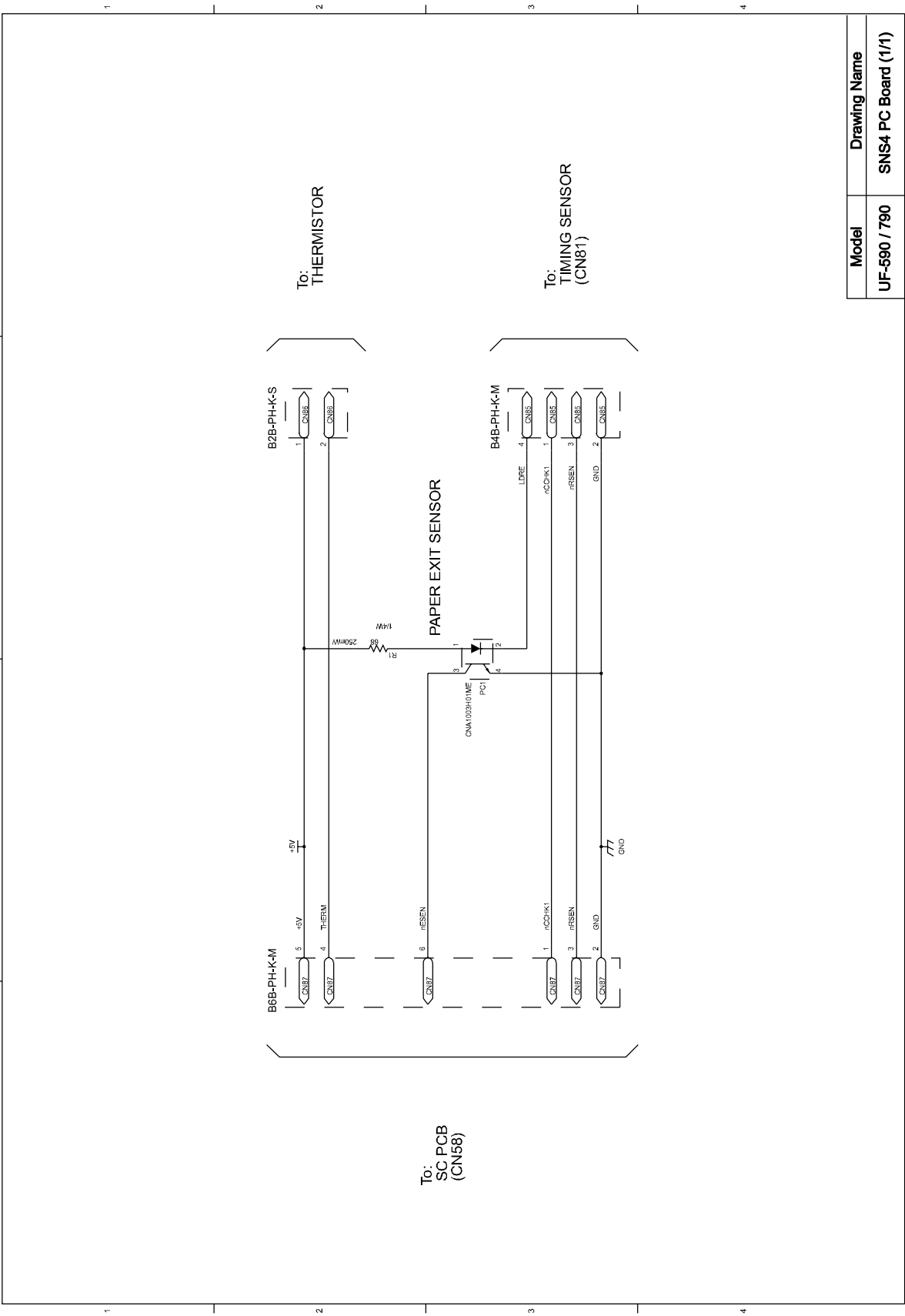
Model	Drawing Name
UF-590 / 790	SNS4 PC Board (1/1)

10.9. CCD PC Board

10.10. ILS PC Board

	Model	Drawing Name
	UF-590 / 790	ILS PC Board (1/1)

287
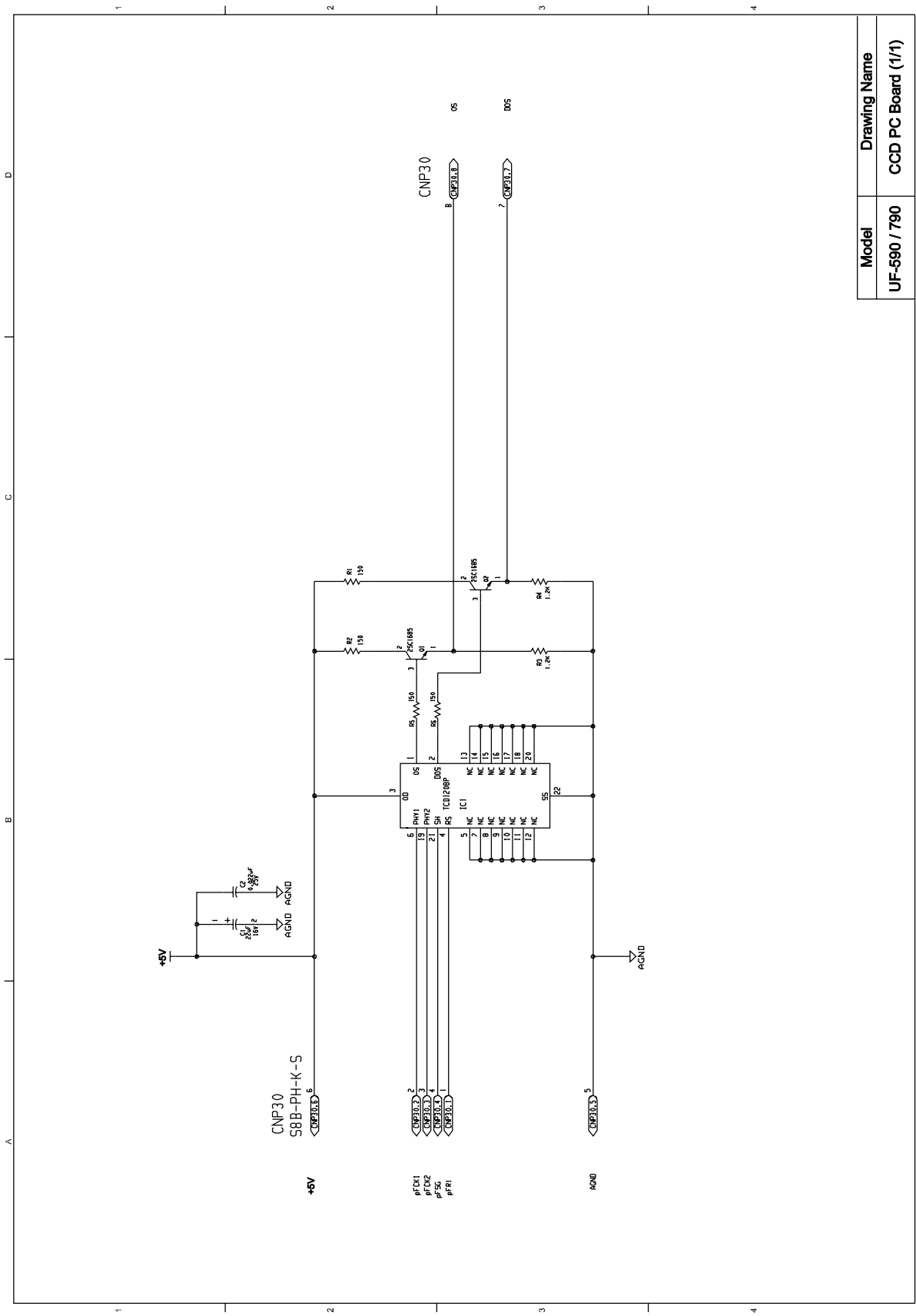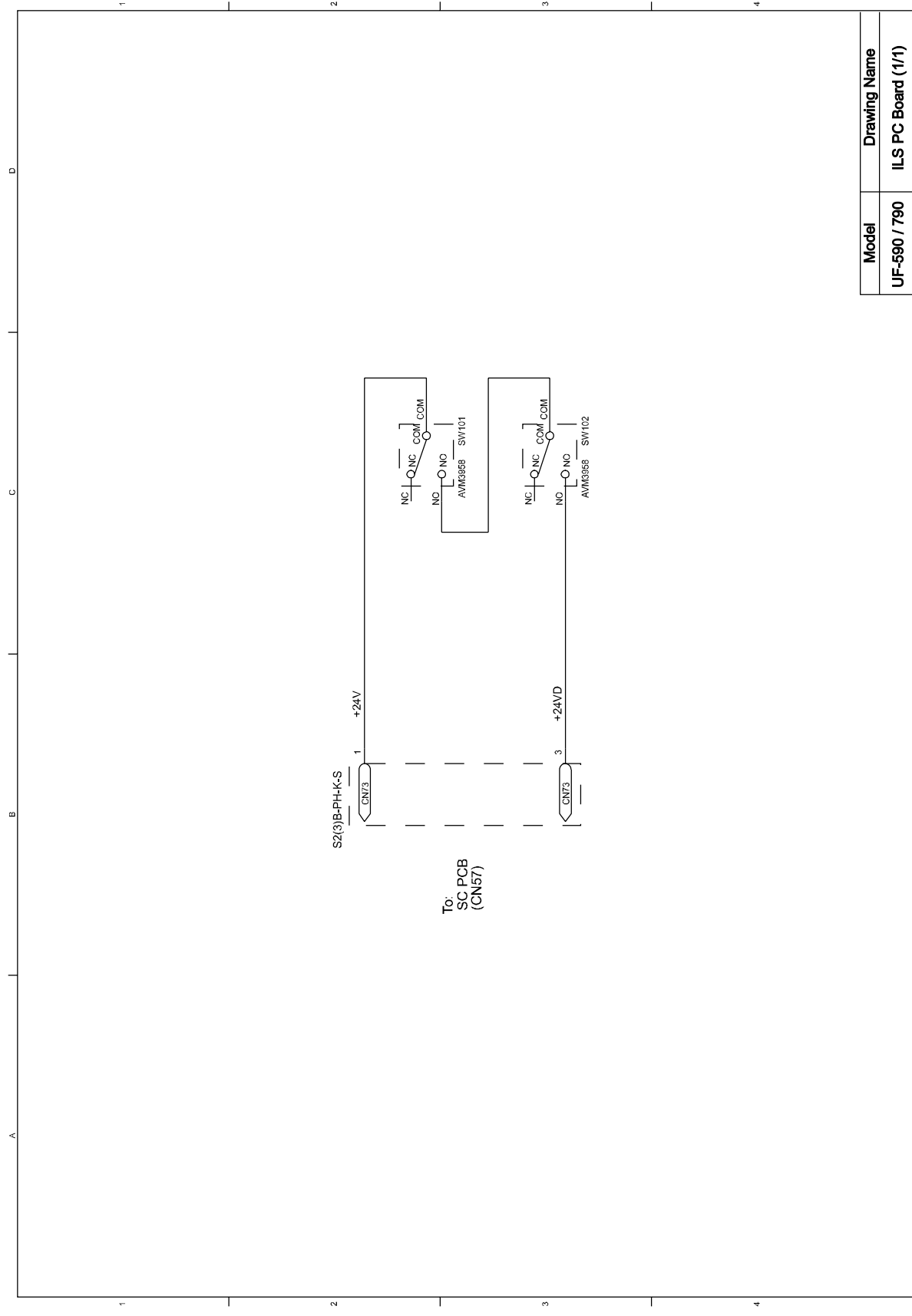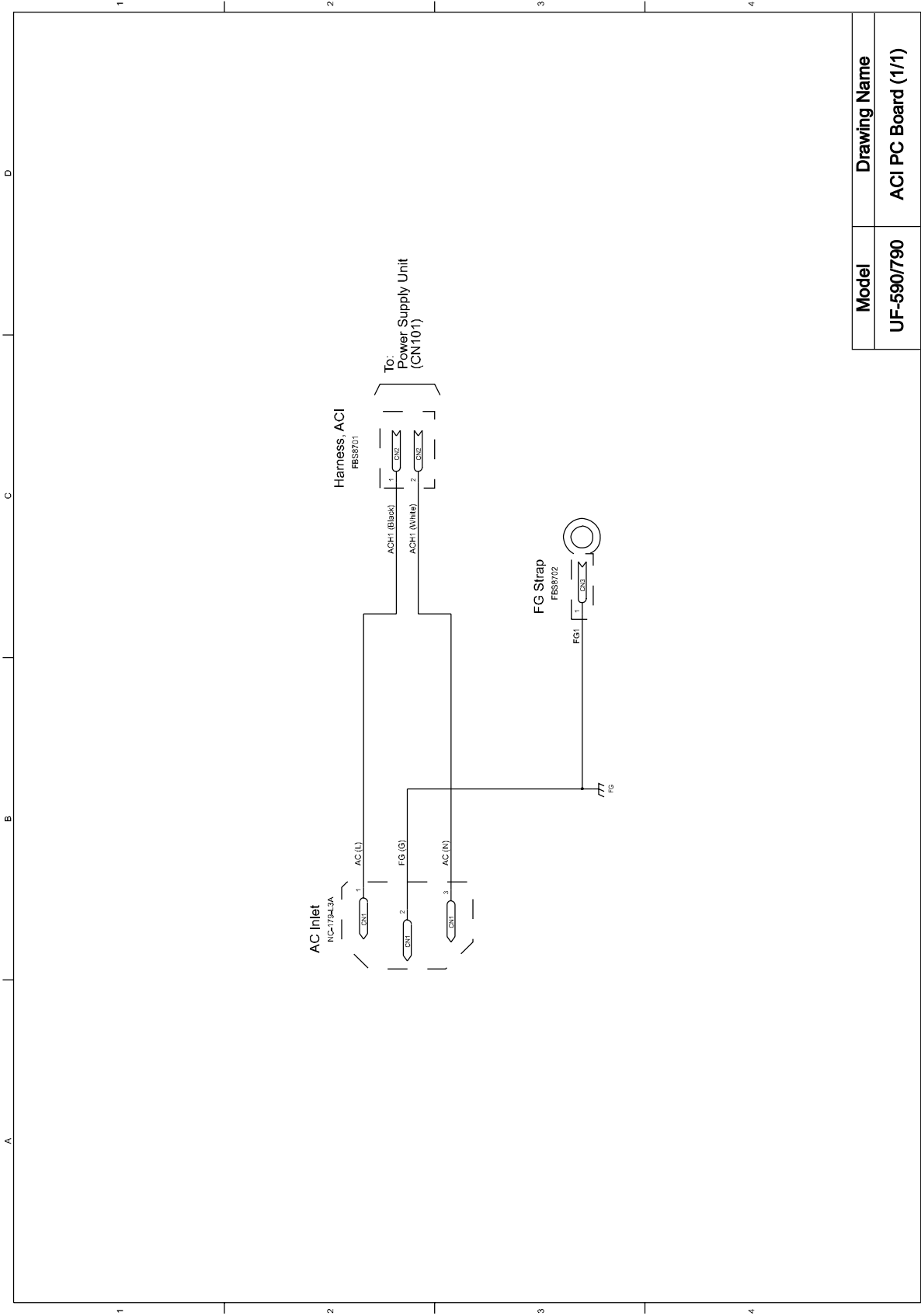
10.11. ACI PC Board

Model	Drawing Name
UF-590/790	ACI PC Board (1/1)

To:
Power Supply Unit
(CN101)

Harness, ACI
FBS8701

CN2
CN2

ACH1 (Black)
ACH1 (White)

FG Strap
FBS8702

CN1
FG1

AC Inlet
NC-1794-3A

AC (L)
FG (G)
AC (N)

CN1
CN1
CN1

FG

10.12. Power Supply Unit

Model	Drawing Name
UF-590 / 790	HVPS (1/4)

Model	Drawing Name
UF-590 / 790	HVPS (3/4)

F500
ICP-N38 1.5A

CN103
+24VM
GND
GND
GND
12
3
4
5

R501
39Ω 0.5W

R502
39Ω 0.5W

C500
47u 35V

R503
10k

R504
3.3k

IC500
L5431

C501
4.7u 50V

R505
10k

FG

A
B
C
D

Model	Drawing Name
UF-590 / 790	HVPS (4/4)